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# Trace Metal Data in Water from Lakes and Streams of The Experimental Lakes Area, Northwestern Ontario, 1987-1996

R.P. Weidman, D.R. Cruikshank and C.R. Ranson

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Canadian Data Report of

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1998

# TRACE METAL DATA IN WATER FROM LAKES AND STREAMS OF THE EXPERIMENTAL LAKES AREA, NORTHWESTERN ONTARIO, 1987-1996.

by

**R.P. Weidman, D.R. Cruikshank and C.R. Ranson**

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## ABSTRACT

Weidman, R.P., D.R. Cruikshank and C.R. Ranson. 1998. Trace metal data in water from lakes and streams in the Experimental Lakes Area, northwestern Ontario, 1987-1996. Can. Data Rep. Fish. Aquat. Sci. 1046: iv + 59 p.

Trace metal data was collected from lakes and streams in the Experimental Lakes Area, northwestern Ontario, from 1987-1996. Samples were analyzed at the Freshwater Institute for aluminum, copper, iron, manganese, and zinc. This report presents open water mean concentrations, one meter concentrations over time, and depth profiles over time for each metal by lake or stream.

Key words: trace metals; Experimental Lakes Area; aluminum; copper; iron; manganese; zinc; open water mean concentration.

## RÉSUMÉ

Weidman, R.P., D.R. Cruikshank and C.R. Ranson. 1998. Trace metal data in water from lakes and streams in the Experimental Lakes Area, northwestern Ontario, 1987-1996. Can. Data Rep. Fish. Aquat. Sci. 1046: iv + 59 p.

Des données de métaux traces ont été recueillies à partir de lacs et ruisseaux de la Région des Lacs Experimentaux, nord-ouest ontarien, entre 1987 et 1996. Les échantillons ont été analysés à l'Institut des Eaux Douces pour l'aluminium, le cuivre, le fer, le manganèse et le zinc. Ce rapport présente les concentrations moyennes en eaux ouvertes, les concentrations à un mètre dans le temps et les profils verticaux dans le temps pour chaque métal par lac ou ruisseau.

Mots-clés: métaux traces; Région des Lacs Expérimentaux; aluminium; cuivre; fer; manganèse; zinc; concentrations moyennes dans les eaux ouvertes.

## INTRODUCTION

This report compiles trace metal data collected over a 10-year period from eight lake basins and five streams in the Experimental Lakes Area (ELA). Samples were analyzed for aluminum (Al), copper (Cu), iron (Fe), manganese (Mn), and zinc (Zn). Three of the lake basins were being experimentally acidified during the study. Cruikshank (1986, 1991 and 1994) presents details of lake manipulations.

Changes in concentration and chemistry of trace metals are known to occur during lake acidification. During a 5 year experimental acidification of ELA lake 223, increased concentrations of Mn, Na, Zn, Al and decreased concentrations of suspended C, total dissolved N, Fe and chloride were observed (Schindler, 1982). Acidification may also increase the toxicity of trace metals, such as copper and zinc, to freshwater fish (Jackson et al, 1980, Schofield, 1976). In order to follow changes in chemistry and concentrations, trace metal data was collected at various depths in acidic systems.

## METHODS

### DATA COLLECTION

#### Bottle preparation

Rinsing and standard preparation water was distilled and passed through a Barnstead Ultrapure mixed-bed ion exchange resin column. New bottles and reused bottles were soap washed and then soaked in 10% nitric acid solution for at least three days, rinsed and filled with 0.5% nitric acid until just before sampling. Environmental grade acids were used in bottle preparation and post sampling acidification. Bottles were stored in new polyethylene plastic bags until they were labeled and then double bagged for transport to the field.

#### Field sampling

Brunskill and Schindler (1971) and Beaty (1981) describe locations of lakes and streams. All lakes were sampled at their point of maximum depth, which was marked with an anchored buoy.

Trace metal water samples were collected using a Masterflex peristaltic pump with silicone rubber pump tubing and sampling lines of Tygon tubing marked off in 1 m intervals. Bottles were emptied of acid solution, rinsed twice with water from the depth to be sampled, and completely filled by holding the sampling line above the container. Containers did not come in contact with the sampling line and were minimally handled. Filled bottles were capped and returned to the double plastic bag. Samples obtained from lake inflows were taken by dipping the bottles with hands downstream of the bottle inlet.

#### Acidification

Samples were transported to the FWI within one week of collection, acidified with 0.5% nitric acid and refrigerated until analysis. The interval between collection and analysis was usually less than six months and rarely exceeded one year.

### ANALYSIS

#### Instrumentation

Three instrumental techniques were used for metals analysis:

A. Graphite furnace atomic absorption spectrophotometry (GFAA) using one of two instruments: 1. Varian 975 with a GTA-95 graphite tube atomizer (GFAA-975). 2. Hitachi polarized Zeeman Z-8200 graphite furnace (GFAA-82).

B. Air acetylene flame atomic absorption spectrophotometry using a Varian Techtron

AA-5 or Varian Spectra AA-20 (FAA-5, FAA-20).

C. Direct current argon plasma emission spectrometry using a Spectrametrics Spectraspan IIIB with 1000 mg/L Cs ionization buffer in both samples and standards (DCP).

Methods of analysis

From 1986 to 1991 the GFAA-975 was used to analyze samples with low metal concentrations. From 1991 to 1996 the GFAA-82 was the main instrument used.

The FAA was used to analyze iron and manganese when concentrations exceeded GFAA-975 or GFAA-82 working range. The FAA-5 was used from 1987 to 1990 and the FAA-20 was used from 1990 to 1996. Samples higher in concentration, the flame analysis range, were analyzed with the DCP.

Phosphate ions were found to increase the sensitivity of Zn analysis (GFAA). 5 µL of 0.02% phosphoric acid was injected with each sample to normalize this effect (Cruikshank et al, 1988).

## QUALITY CONTROL AND INSTRUMENT CALIBRATION

From 1987 to 1996, standards were used to calibrate the analytical instruments. They consisted of a 0.5% nitric acid solution (1/2 ml nitric acid in 100 ml distilled water) along with known amounts of the element of interest. The instrument was calibrated with a set of standards that covered the expected range of each element. After every 15-20 samples the instrument was recalibrate with the same set standards.

Certified reference samples, prepared by the Marine Analytical Chemistry Standards Program of the National Research Council of Canada, were periodically used to check trace metal analysis. The reference sample SLRS-1 was used from 1987 to 1996 and SLRS-2 was used from 1990 to 1996. Each reference sample contained known amounts of the elements of interest. Quality control data is summarized in Tables 1 and 2.

## DATA ANALYSIS

Open water means in Tables 2a to 2e were calculated without winter samples and values greater than or less than two standard deviations of the mean were excluded. Once outliers were excluded the open water means were recalculated.

1 meter concentrations in Figures 1.1 to 1.12 include winter samples but exclude values that were greater or less than two standard deviations of the calculated annual mean (January 1 to December 31). The excluded outliers are indicated in the appendices by an asterisk.

The method of excluding values greater than or less than two standard deviations was used as a screening tool for data outliers. It was applied without preconceptions of the data distribution.

## RESULTS

Tables 2a to 2e present the open water mean concentrations (May 1 to November 31), standard deviations, and annual sample sizes of each metal at each depth sampled for each lake. The absence of a decimal place in the values of these tables indicates a whole number. Zero values indicate trace metal concentrations lower than the detection limits of the instrument used for the analysis.

Figures 1.1 to 1.12 show the 1 m concentrations (raw data) over time of each metal for lakes 223, 239, 225, 382, 226N, 226S, 302N, 302S and 239 streams. The annual increments in these figures mark January 1 of each year. Figures 2.1 to 2.9

present the open water mean concentrations calculated in Tables 2a to 2e. Appendices A1.1 to J5.5 show the trace metal depth profiles for each lake by metal and for each year the lake was sampled.

## ACKNOWLEDGMENTS

We would like to thank the Field Operations staff who collected trace metal samples. Thanks to the FWI Chemistry staff under Bob Hunt and Carolyn Ranson for sample analysis. Thanks to Michael Turner for providing valuable advice on the presentation of this report along with its editing, to Susan Kasian whom provided statistical guidance with calculations and to Rudy Wagemann for editing the final report.

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Table 1. Quality control waters, analysed by graphite furnace (direct injection), used to control trace metal analysis of ELA waters.

| | SLRS-1 Metal (ug/L) | | | | | SLRS-2 Metal (ug/L) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Cu | Zn | Mn | Fe | Al | Cu | Zn | Mn | Fe | Al |
| N | 16 | 17 | 5 | 7 | 29 | 11 | 12 | 10 | | 6 |
| Mean | 3.54 | 0.89 | 1.71 | 33.6 | 29.2 | 2.92 | 3.23 | 10.9 | | 89.7 |
| Standard Deviation | 0.46 | 0.25 | 0.57 | 3.3 | 4.2 | 0.51 | 0.31 | 0.8 | | 9.0 |
| Published Value | 3.58 | 1.34 | 1.77 | 31.5 | 23.5 | 2.76 | 3.33 | 10.1 | 129 | 84.4 |
| 95% Tolerence Limit | 0.3 | 0.20 | 0.23 | 2.1 | 1.2 | 0.17 | 0.15 | 0.3 | 7 | 3.4 |

Table 2. Summary of flame analysed quality control waters used to control iron trace metal analysis of ELA waters.

| | SLRS-1, iron (ug/L) | SLRS-2, iron (ug/L) |
|---|---|---|
| N | 6 | 7 |
| Mean | 34.8 | 127 |
| Standard Deviation | 1.8 | 6 |
| Published Value | 31.5 | 129 |
| 95% Tolerence Limit | 2.1 | 7 |

Table 3a. Open water mean concentrations as a function of depth (m), and standard deviations of Al (ug/L) in L223, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 8 | 10 | 12 | 14 | IF |
|---|---|---|---|---|---|---|---|
| 87 | 9.3 ± 2.9 ( 11 ) | 7.7 ± 2.5 ( 6 ) | 7.3 ± 3.3 ( 6 ) | 11.7 ± 2.3 ( 4 ) | 14.3 ± 10.9 ( 6 ) | 25.8 ± 19.4 ( 5 ) | 17.8 ± 3 ( 8 ) |
| 88 | 11 ± 2.6 ( 21 ) | 10 ± 1.5 ( 9 ) | 13 ± 1.8 ( 9 ) | 18.6 ± 6 ( 9 ) | 38.9 ± 18.1 ( 8 ) | 73.3 ± 11 ( 7 ) | |
| 89 | 17.2 ± 3.8 ( 13 ) | 19.1 ± 5 ( 7 ) | 17.3 ± 2.6 ( 7 ) | 18.4 ± 1 ( 5 ) | 24.4 ± 7 ( 7 ) | 40.6 ± 3.2 ( 5 ) | 50.7 ± 22.6 ( 11 ) |
| 91 | 15.2 ± 5.2 ( 10 ) | 14.5 ± 4.3 ( 6 ) | 15.2 ± 4.6 ( 5 ) | 18.8 ± 5.6 ( 6 ) | 22.7 ± 5.8 ( 6 ) | 35.2 ± 7.3 ( 5 ) | |
| 92 | 37 ± 11 ( 8 ) | 32 ± 6.1 ( 6 ) | 37.1 ± 8 ( 7 ) | 25.4 ± 16.2 ( 7 ) | 49.1 ± 13.8 ( 7 ) | 75.3 ± 24.3 ( 6 ) | 87 ± 47.8 ( 3 ) |
| 93 | 16.5 ± 8.9 ( 10 ) | 14 ± 10.7 ( 7 ) | 13 ± 10.3 ( 7 ) | 17.3 ± 13.7 ( 7 ) | 16.3 ± 8.3 ( 6 ) | 22.3 ± 9.4 ( 6 ) | 102 ± 0 ( 1 ) |
| 94 | 7.8 ± 4.2 ( 10 ) | 9.1 ± 6.2 ( 7 ) | 10.3 ± 5.6 ( 6 ) | 10.6 ± 3.9 ( 7 ) | 22 ± 13 ( 6 ) | 32.3 ± 17 ( 7 ) | 288 ± 0 ( 1 ) |
| 95 | 9 ± 1.2 ( 9 ) | 9.3 ± 1.9 ( 6 ) | 9.7 ± 2 ( 6 ) | 15.7 ± 2 ( 6 ) | 24 ± 10.9 ( 7 ) | 30.7 ± 15 ( 6 ) | |

Table 3b. Open water mean concentrations as a function of depth (m), and standard deviations of Cu (ug/L) in L223, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 8 | 10 | 12 | 14 | IF |
|---|---|---|---|---|---|---|---|
| 88 | 0 ± 0.1 ( 24 ) | 0 ± 0.1 ( 9 ) | 0.1 ± 0.1 ( 9 ) | 0 ± 0.1 ( 10 ) | 0.1 ± 0.2 ( 10 ) | 0.3 ± 0.2 ( 10 ) | |
| 89 | 0 ± 0 ( 12 ) | 0 ± 0 ( 7 ) | 0 ± 0 ( 7 ) | 0 ± 0 ( 7 ) | 0.1 ± 0.2 ( 7 ) | 0.6 ± 0.3 ( 7 ) | 0.1 ± 0.2 ( 12 ) |
| 91 | 0.3 ± 0.4 ( 9 ) | 0 ± 0 ( 6 ) | 0 ± 0.1 ( 5 ) | 0 ± 0.1 ( 6 ) | 0.1 ± 0.1 ( 6 ) | 0.3 ± 0.2 ( 6 ) | |
| 93 | 0.5 ± 0.3 ( 16 ) | 0.4 ± 0.3 ( 14 ) | 0.2 ± 0.2 ( 14 ) | 0.3 ± 0.3 ( 13 ) | 0.3 ± 0.2 ( 14 ) | 0.3 ± 0.2 ( 14 ) | 0.5 ± 0.2 ( 4 ) |
| 94 | 0.3 ± 0.3 ( 11 ) | 0.1 ± 0.1 ( 7 ) | 0.1 ± 0.1 ( 7 ) | 0 ± 0 ( 5 ) | 0.1 ± 0.1 ( 6 ) | 0.1 ± 0.1 ( 5 ) | 0.6 ± 0 ( 1 ) |
| 95 | 0.3 ± 0.2 ( 11 ) | 0.3 ± 0.1 ( 7 ) | 0.3 ± 0.2 ( 7 ) | 0.5 ± 0.2 ( 7 ) | 0.7 ± 0.5 ( 7 ) | 0.6 ± 0.3 ( 7 ) | |

IF - Inflow

Table 3c. Open water mean concentrations as a function of depth (m), and standard deviations of Fe (ug/L) in L223, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 8 | 10 | 12 | 14 | IF |
|---|---|---|---|---|---|---|---|
| 87 | 27.2 ± 48.1 ( 10 ) | 24.8 ± 26.9 ( 6 ) | 19 ± 11.4 ( 6 ) | 67.8 ± 43 ( 4 ) | 3077.8 ± 3780.4 ( 6 ) | 5730 ± 5843.9 ( 5 ) | 163.1 ± 99.2 ( 8 ) |
| 88 | 54.1 ± 34.2 ( 19 ) | 82.4 ± 62.1 ( 7 ) | 116.5 ± 41.4 ( 6 ) | 252 ± 97 ( 5 ) | 906.7 ± 606.6 ( 6 ) | 2060 ± 1913.4 ( 7 ) | |
| 89 | 25.7 ± 2.3 ( 6 ) | 38.5 ± 28.1 ( 4 ) | 119.7 ± 47.7 ( 6 ) | 183.8 ± 59.7 ( 5 ) | 445.4 ± 228.6 ( 5 ) | 3103.5 ± 2098.5 ( 6 ) | 385.5 ± 233.9 ( 10 ) |
| 91 | 44 ± 38.5 ( 9 ) | 50.5 ± 41.5 ( 6 ) | 93.3 ± 41.9 ( 6 ) | 136.4 ± 40.1 ( 5 ) | 565.2 ± 507.5 ( 5 ) | 2921.7 ± 2135.1 ( 6 ) | |
| 92 | 74.3 ± 46.8 ( 8 ) | 82.7 ± 64.5 ( 7 ) | 166 ± 75.7 ( 7 ) | 264 ± 265.6 ( 7 ) | 1763.4 ± 1474.7 ( 7 ) | 2455.3 ± 2349.9 ( 7 ) | 242.7 ± 167.7 ( 3 ) |
| 93 | 41.5 ± 28.7 ( 10 ) | 40.3 ± 16.2 ( 6 ) | 66.1 ± 29.4 ( 7 ) | 97.7 ± 44.7 ( 6 ) | 1160.9 ± 1459 ( 7 ) | 2599.1 ± 2941.2 ( 7 ) | 266 ± 0 ( 1 ) |
| 94 | 62 ± 41.3 ( 8 ) | 58.5 ± 61.6 ( 4 ) | 102.5 ± 55.2 ( 6 ) | 234.3 ± 220.3 ( 6 ) | 2846.5 ± 3190.4 ( 6 ) | 719.8 ± 1216.6 ( 5 ) | 1151 ± 0 ( 1 ) |
| 95 | 35.2 ± 23.6 ( 10 ) | 29 ± 14.7 ( 6 ) | 71.6 ± 53 ( 7 ) | 341.3 ± 247.1 ( 7 ) | 2105.4 ± 1893.7 ( 7 ) | 2715.1 ± 2538.4 ( 7 ) | |

Table 3d. Open water mean concentrations as a function of depth (m), and standard deviations of Mn (ug/L) in L223, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 8 | 10 | 12 | 14 | IF |
|---|---|---|---|---|---|---|---|
| 87 | 74.2 ± 6.7 ( 10 ) | 80.5 ± 6.2 ( 6 ) | 79.8 ± 5.7 ( 6 ) | 92.8 ± 16.8 ( 4 ) | 158.5 ± 57.5 ( 6 ) | 159.2 ± 65.2 ( 5 ) | 13.7 ± 8.5 ( 7 ) |
| 88 | 68.3 ± 4 ( 19 ) | 71.4 ± 22.8 ( 7 ) | 77.3 ± 9 ( 7 ) | 87.2 ± 17.1 ( 5 ) | 160 ± 65.4 ( 7 ) | 195 ± 98 ( 7 ) | |
| 89 | 49.5 ± 5.9 ( 11 ) | 55.1 ± 8.8 ( 7 ) | 60 ± 9.7 ( 6 ) | 112 ± 57.7 ( 7 ) | 140.1 ± 74.3 ( 7 ) | 181.3 ± 101 ( 6 ) | 25.4 ± 16.5 ( 11 ) |
| 91 | 29.6 ± 13.6 ( 10 ) | 28.3 ± 11.3 ( 6 ) | 47.8 ± 9.4 ( 6 ) | 120.5 ± 63.7 ( 6 ) | 253.2 ± 181.3 ( 6 ) | 328.8 ± 198 ( 6 ) | |
| 92 | 25.9 ± 13.6 ( 8 ) | 25.9 ± 14.8 ( 7 ) | 56.7 ± 9.2 ( 6 ) | 53.8 ± 52.3 ( 6 ) | 192.3 ± 144.6 ( 7 ) | 214.6 ± 145.3 ( 7 ) | 11 ± 7.9 ( 3 ) |
| 93 | 22.5 ± 4.6 ( 10 ) | 23.7 ± 3.5 ( 7 ) | 26.9 ± 4.2 ( 7 ) | 40 ± 19.5 ( 6 ) | 62 ± 48.4 ( 5 ) | 192.9 ± 168.7 ( 7 ) | 13 ± 0 ( 1 ) |
| 94 | 14.5 ± 8.5 ( 11 ) | 15.7 ± 9.5 ( 7 ) | 24.4 ± 4.1 ( 5 ) | 48 ± 27.5 ( 5 ) | 208.8 ± 154.3 ( 6 ) | 226.7 ± 143.7 ( 7 ) | 23 ± 0 ( 1 ) |
| 95 | 13.9 ± 7.4 ( 11 ) | 10.1 ± 7.8 ( 7 ) | 19.3 ± 12.5 ( 7 ) | 98.6 ± 75.9 ( 7 ) | 211.6 ± 145.9 ( 7 ) | 187.9 ± 137.8 ( 7 ) | |

IF - Inflow

Table 3e. Open water mean concentrations as a function of depth (m), and standard deviations for Zn (ug/L) in L223, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 8 | 10 | 12 | 14 | IF |
|---|---|---|---|---|---|---|---|
| 87 | 3 ± 1 ( 10 ) | 2.4 ± 0.5 ( 6 ) | 2.1 ± 0.3 ( 6 ) | 2.1 ± 0.7 ( 4 ) | 1.9 ± 0.7 ( 6 ) | 1.5 ± 0.6 ( 5 ) | 2.9 ± 1.5 ( 7 ) |
| 88 | 1.5 ± 0.5 ( 22 ) | 1.1 ± 0.5 ( 6 ) | 1.2 ± 0.4 ( 6 ) | 1.1 ± 0.5 ( 7 ) | 1.4 ± 0.6 ( 7 ) | 1.8 ± 0.8 ( 7 ) | |
| 89 | 1.2 ± 0.5 ( 13 ) | 0.9 ± 0.2 ( 7 ) | 1 ± 0.1 ( 7 ) | 1.1 ± 0.2 ( 7 ) | 1 ± 0.2 ( 7 ) | 1 ± 0.2 ( 6 ) | 2.6 ± 1.6 ( 12 ) |
| 91 | 0.6 ± 0.4 ( 9 ) | 1.2 ± 1.1 ( 6 ) | 0.6 ± 0.3 ( 5 ) | 0.9 ± 0.5 ( 5 ) | 0.6 ± 0.4 ( 6 ) | 1.1 ± 0.8 ( 6 ) | |
| 92 | 1.4 ± 1.3 ( 8 ) | 1.6 ± 1.6 ( 7 ) | 0.8 ± 0.5 ( 7 ) | 0.5 ± 0.5 ( 6 ) | 0.8 ± 0.7 ( 6 ) | 1.2 ± 0.5 ( 7 ) | 2.1 ± 0.7 ( 3 ) |
| 93 | 0.8 ± 0.8 ( 9 ) | 0.5 ± 0.4 ( 6 ) | 0.2 ± 0.3 ( 6 ) | 0.4 ± 0.5 ( 6 ) | 0.8 ± 1.1 ( 7 ) | 1.2 ± 0.9 ( 6 ) | |
| 94 | 1.8 ± 1 ( 11 ) | 1 ± 0.5 ( 7 ) | 1.3 ± 1 ( 7 ) | 1.5 ± 0.6 ( 7 ) | 2.6 ± 1.8 ( 7 ) | 3.7 ± 2.3 ( 7 ) | 5.4 ± 0 ( 1 ) |
| 95 | 1 ± 1 ( 11 ) | 0.6 ± 0.4 ( 7 ) | 1.3 ± 0.8 ( 7 ) | 1.2 ± 0.4 ( 7 ) | 1.5 ± 0.7 ( 6 ) | 1.2 ± 0.8 ( 6 ) | |

IF - Inflow

Table 4a. Open water mean concentrations as a function of depth (m), and standard deviations of Al (ug/L) in L239, with sample size in parenthesis.

| Year/Depth | 1 | 5 | 10 | 15 | 20 | 25 | 30 |
|---|---|---|---|---|---|---|---|
| 87 | 27.6 ± 7.2 ( 12 ) | 29.3 ± 5.2 ( 6 ) | 31.5 ± 3.6 ( 4 ) | 41.3 ± 15.1 ( 6 ) | 42 ± 8.9 ( 5 ) | 41.2 ± 1.5 ( 5 ) | 52.8 ± 6.1 ( 5 ) |
| 88 | 39.6 ± 4.6 ( 7 ) | 40.3 ± 6.5 ( 6 ) | 37.2 ± 5.5 ( 6 ) | 36.7 ± 5.1 ( 6 ) | 42.2 ± 2.4 ( 6 ) | 53.4 ± 4.5 ( 5 ) | 57.4 ± 29.8 ( 5 ) |
| 89 | 35.2 ± 11 ( 9 ) | 37 ± 13.3 ( 7 ) | 39.7 ± 6.8 ( 7 ) | 33 ± 11.6 ( 7 ) | 40.1 ± 7.5 ( 7 ) | 39 ± 13 ( 7 ) | 53.7 ± 19.2 ( 7 ) |

Table 4b. Open water mean concentrations as a function of depth (m), and standard deviations of Cu (ug/L) in L239, with sample size in parenthesis.

| Year/Depth | 1 | 5 | 10 | 15 | 20 | 25 | 30 |
|---|---|---|---|---|---|---|---|
| 88 | 0.1 ± 0.1 ( 7 ) | 0 ± 0 ( 5 ) | 0.1 ± 0.2 ( 6 ) | 0.1 ± 0.1 ( 6 ) | 0.1 ± 0.2 ( 6 ) | 0.1 ± 0.1 ( 6 ) | 0 ± 0.1 ( 5 ) |
| 89 | 0.3 ± 0.1 ( 8 ) | 0.2 ± 0.1 ( 6 ) | 0.2 ± 0.2 ( 7 ) | 0.2 ± 0.1 ( 7 ) | 0.2 ± 0.1 ( 7 ) | 0.2 ± 0.1 ( 7 ) | 0.3 ± 0.1 ( 7 ) |

Table 4c. Open water mean concentrations as a function of depth (m), and standard deviations of Fe (ug/L) in L239, with sample size in parenthesis.

| Year/Depth | 1 | 5 | 10 | 15 | 20 | 25 | 30 |
|---|---|---|---|---|---|---|---|
| 87 | 4.1 ± 4.5 ( 8 ) | 0 ± 0 ( 2 ) | 12 ± 1 ( 2 ) | 8 ± 2 ( 2 ) | 18.5 ± 3.5 ( 2 ) | 56 ± 14 ( 2 ) | 97 ± 23 ( 2 ) |
| 88 | 21 ± 6.6 ( 6 ) | 26.2 ± 5.9 ( 5 ) | 28.5 ± 4.4 ( 6 ) | 30.5 ± 9.9 ( 6 ) | 44 ± 8.6 ( 6 ) | 81 ± 3.8 ( 5 ) | 212.5 ± 115.8 ( 4 ) |
| 89 | 22.3 ± 3.3 ( 6 ) | 30 ± 10.6 ( 6 ) | 35.7 ± 9.9 ( 6 ) | 32.2 ± 9.2 ( 5 ) | 53 ± 12.6 ( 6 ) | 81.8 ± 13.8 ( 5 ) | 295.7 ± 175.9 ( 7 ) |

Table 4d. Open water mean concentrations as a function of depth (m), and standard deviations of Mn (ug/L) in L239, with sample size in parenthesis.

| Year/Depth | 1 | 5 | 10 | 15 | 20 | 25 | 30 |
|---|---|---|---|---|---|---|---|
| 87 | 0 ± 0 ( 6 ) | 0 ± 0 ( 2 ) | 0 ± 0 ( 1 ) | 0.6 ± 0.6 ( 2 ) | 1.6 ± 0.9 ( 2 ) | 10.7 ± 7.3 ( 2 ) | 12 ± 0 ( 1 ) |
| 88 | 5.9 ± 4 ( 7 ) | 5.6 ± 3.8 ( 6 ) | 5.3 ± 2.6 ( 6 ) | 6 ± 2.4 ( 6 ) | 7.1 ± 3 ( 5 ) | 8.8 ± 4 ( 5 ) | 50.5 ± 30.6 ( 4 ) |
| 89 | 3.3 ± 2 ( 9 ) | 4.3 ± 2.1 ( 7 ) | 6 ± 1.4 ( 7 ) | 5.9 ± 1.6 ( 7 ) | 6.1 ± 1.2 ( 6 ) | 10.7 ± 5.6 ( 6 ) | 37.9 ± 30.5 ( 6 ) |

Table 4e. Open water mean concentrations as a function of depth (m), and standard deviations of Zn (ug/L) in L239, with sample size in parenthesis.

| Year/Depth | 1 | 5 | 10 | 15 | 20 | 25 | 30 |
|---|---|---|---|---|---|---|---|
| 87 | 1.3 ± 0.7 ( 8 ) | 1.2 ± 0.1 ( 2 ) | 1.2 ± 0.1 ( 2 ) | 1.9 ± 0.7 ( 2 ) | 1.3 ± 0.2 ( 2 ) | 1.4 ± 0.5 ( 2 ) | 1.7 ± 0.5 ( 2 ) |
| 88 | 0.7 ± 0.3 ( 7 ) | 0.6 ± 0.2 ( 6 ) | 0.5 ± 0.2 ( 6 ) | 0.7 ± 0.4 ( 6 ) | 0.7 ± 0.1 ( 5 ) | 0.6 ± 0.3 ( 6 ) | 1 ± 0.4 ( 5 ) |
| 89 | 1.3 ± 1.3 ( 8 ) | 1.1 ± 0.5 ( 6 ) | 1.7 ± 2.2 ( 7 ) | 1.1 ± 0.6 ( 7 ) | 1.1 ± 0.4 ( 7 ) | 0.9 ± 0.3 ( 7 ) | 1.4 ± 0.7 ( 7 ) |

Table 5a. Open water mean concentrations as a function of depth (m), and standard deviations of Al (ug/L) in L302N, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 6 | 9 | 11 | 13 |
|---|---|---|---|---|---|---|
| 87 | 11 ± 2.7 ( 11 ) | 10.8 ± 2.1 ( 7 ) | 9.6 ± 1.4 ( 6 ) | 12 ± 3.1 ( 6 ) | 25.5 ± 13 ( 7 ) | 27.8 ± 12.7 ( 7 ) |
| 88 | 32.4 ± 10.3 ( 25 ) | 29.9 ± 8.9 ( 7 ) | 25.6 ± 6.7 ( 7 ) | 44.7 ± 23.5 ( 7 ) | 53 ± 17.6 ( 6 ) | 56.5 ± 19.8 ( 6 ) |
| 89 | 41.4 ± 7.7 ( 13 ) | 42.4 ± 6.2 ( 7 ) | 32.7 ± 3.5 ( 6 ) | 26.8 ± 2.8 ( 5 ) | 46.8 ± 6.4 ( 6 ) | 60.5 ± 6.6 ( 6 ) |
| 91 | 39.8 ± 8.4 ( 5 ) | 44.5 ± 0.5 ( 2 ) | 42.5 ± 3.5 ( 2 ) | 46 ± 0 ( 1 ) | 46 ± 0 ( 1 ) | 45.5 ± 1.5 ( 2 ) |
| 92 | 73.7 ± 38 ( 11 ) | 61.3 ± 26.6 ( 6 ) | 51 ± 28.5 ( 6 ) | 49.8 ± 23.5 ( 6 ) | 49.4 ± 26.9 ( 6 ) | 70 ± 36.8 ( 6 ) |
| 93 | 56.4 ± 28.2 ( 21 ) | 53 ± 37.1 ( 8 ) | 48.9 ± 21.7 ( 7 ) | 44.7 ± 17.6 ( 7 ) | 65.2 ± 17.9 ( 6 ) | 52.3 ± 22.9 ( 7 ) |
| 94 | 34.7 ± 12.1 ( 12 ) | 25.2 ± 12.8 ( 6 ) | 30.6 ± 11 ( 7 ) | 26.3 ± 12.3 ( 6 ) | 32.6 ± 7.9 ( 7 ) | 35.4 ± 9.4 ( 7 ) |
| 95 | 29.3 ± 8.5 ( 8 ) | 28.9 ± 8.4 ( 7 ) | 36.6 ± 10.4 ( 7 ) | 41 ± 10.8 ( 7 ) | 57.3 ± 18.8 ( 7 ) | 67.7 ± 21.7 ( 7 ) |

Table 5b. Open water mean concentrations as a function of depth (m), and standard deviations of Cu (ug/L) in L302N, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 6 | 9 | 11 | 13 |
|---|---|---|---|---|---|---|
| 88 | 0.1 ± 0.1 ( 23 ) | 0 ± 0.1 ( 7 ) | 0 ± 0.1 ( 7 ) | 0.2 ± 0.2 ( 6 ) | 0.3 ± 0.2 ( 6 ) | 0.3 ± 0.2 ( 6 ) |
| 89 | 0 ± 0 ( 12 ) | 0 ± 0.1 ( 7 ) | 0 ± 0 ( 6 ) | 0.1 ± 0.1 ( 6 ) | 0.3 ± 0.2 ( 7 ) | 0.4 ± 0.1 ( 7 ) |
| 91 | 0.1 ± 0.1 ( 5 ) | 0 ± 0 ( 2 ) | 0 ± 0 ( 2 ) | 0 ± 0 ( 2 ) | 0.4 ± 0.4 ( 2 ) | 0 ± 0 ( 2 ) |
| 92 | 0.3 ± 0.2 ( 11 ) | 0.2 ± 0.1 ( 6 ) | 0.4 ± 0.3 ( 6 ) | 0.2 ± 0.2 ( 6 ) | 0.3 ± 0.1 ( 5 ) | 0.4 ± 0.1 ( 6 ) |
| 93 | 0.2 ± 0.2 ( 18 ) | 0.3 ± 0.3 ( 8 ) | 0.2 ± 0.2 ( 6 ) | 0.1 ± 0.1 ( 6 ) | 0.2 ± 0.3 ( 6 ) | 0.3 ± 0.3 ( 7 ) |
| 94 | 0.1 ± 0.2 ( 13 ) | 0 ± 0 ( 6 ) | 0 ± 0 ( 6 ) | 0.1 ± 0.1 ( 6 ) | 0.1 ± 0.1 ( 7 ) | 0.1 ± 0.1 ( 7 ) |
| 95 | 0.4 ± 0.2 ( 8 ) | 0.2 ± 0.2 ( 7 ) | 0.3 ± 0.1 ( 7 ) | 0.3 ± 0.1 ( 7 ) | 0.3 ± 0.2 ( 7 ) | 0.3 ± 0.2 ( 7 ) |

Table 5c. Open water mean concentrations as a function of depth (m), and standard deviations of Fe (ug/L) in L302N, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 6 | 9 | 11 | 13 |
|---|---|---|---|---|---|---|
| 87 | 9.2 ± 7 ( 12 ) | 12 ± 4.9 ( 6 ) | 13.3 ± 6.2 ( 6 ) | 289.2 ± 398.8 ( 6 ) | 1812.9 ± 1657.5 ( 7 ) | 2017 ± 1574.8 ( 7 ) |
| 88 | 115 ± 32.9 ( 23 ) | 123.7 ± 28.6 ( 7 ) | 187.1 ± 49.5 ( 7 ) | 428.3 ± 273.6 ( 6 ) | 1153.3 ± 633 ( 6 ) | 1508.6 ± 901.3 ( 7 ) |
| 89 | 87.3 ± 41 ( 10 ) | 137.7 ± 80.8 ( 7 ) | 231.2 ± 34.5 ( 6 ) | 372 ± 63.1 ( 6 ) | 2260.2 ± 1339.5 ( 6 ) | 3774.6 ± 2590.7 ( 7 ) |
| 91 | 130.8 ± 39.1 ( 5 ) | 159.5 ± 46.5 ( 2 ) | 155 ± 61 ( 2 ) | 480.5 ± 272.5 ( 2 ) | 844.5 ± 636.5 ( 2 ) | 2164.5 ± 1953.5 ( 2 ) |
| 92 | 120.5 ± 72.1 ( 10 ) | 123.8 ± 68.6 ( 5 ) | 206 ± 114.6 ( 6 ) | 468 ± 276.1 ( 5 ) | 1552.7 ± 1250.8 ( 6 ) | 1819.8 ± 1297.4 ( 6 ) |
| 93 | 174.6 ± 82.3 ( 20 ) | 186.5 ± 97.2 ( 8 ) | 269.7 ± 98.7 ( 7 ) | 856.8 ± 509.9 ( 6 ) | 1652.3 ± 935.5 ( 7 ) | 1945.1 ± 957.3 ( 7 ) |
| 94 | 105.8 ± 76.9 ( 13 ) | 138.9 ± 93.3 ( 7 ) | 220.3 ± 45.9 ( 6 ) | 480.3 ± 514.8 ( 6 ) | 903.6 ± 949.2 ( 7 ) | 1273.7 ± 971 ( 7 ) |
| 95 | 111.5 ± 52.7 ( 8 ) | 116 ± 50.3 ( 7 ) | 232.3 ± 96.3 ( 7 ) | 665.7 ± 388.3 ( 7 ) | 1768.7 ± 1199.9 ( 7 ) | 2137.6 ± 1241.7 ( 7 ) |

Table 5d. Open water mean concentrations as a function of depth (m), and standard deviations of Mn (ug/L) in L302N, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 6 | 9 | 11 | 13 |
|---|---|---|---|---|---|---|
| 87 | 44.3 ± 19.7 ( 10 ) | 37 ± 24.2 ( 6 ) | 32.2 ± 24.9 ( 6 ) | 310 ± 195.7 ( 5 ) | 362.9 ± 163.2 ( 7 ) | 368.6 ± 139.6 ( 7 ) |
| 88 | 174.8 ± 11.7 ( 23 ) | 175 ± 7.6 ( 6 ) | 190 ± 23.8 ( 6 ) | 223.3 ± 49.2 ( 6 ) | 268.6 ± 64.2 ( 7 ) | 267.1 ± 70.7 ( 7 ) |
| 89 | 209.5 ± 17.4 ( 13 ) | 216.8 ± 22.2 ( 6 ) | 225.2 ± 20.7 ( 6 ) | 244.2 ± 38.5 ( 7 ) | 286.1 ± 51.1 ( 7 ) | 280.1 ± 38.2 ( 6 ) |
| 91 | 128 ± 10.2 ( 5 ) | 131 ± 0 ( 2 ) | 123.5 ± 7.5 ( 2 ) | 172.5 ± 41.5 ( 2 ) | 186 ± 54 ( 2 ) | 184.5 ± 66.5 ( 2 ) |
| 92 | 173.8 ± 8.3 ( 8 ) | 175 ± 12.1 ( 5 ) | 188.8 ± 11.8 ( 5 ) | 204.2 ± 20.2 ( 5 ) | 211.2 ± 28.6 ( 5 ) | 219 ± 25 ( 5 ) |
| 93 | 163 ± 3.5 ( 16 ) | 171 ± 9.6 ( 8 ) | 168.4 ± 2.2 ( 5 ) | 195.6 ± 26.3 ( 7 ) | 194.3 ± 20.5 ( 7 ) | 196 ± 20.5 ( 7 ) |
| 94 | 102.6 ± 16.5 ( 13 ) | 106.1 ± 18.4 ( 7 ) | 130 ± 22.5 ( 7 ) | 214 ± 64.9 ( 7 ) | 224.9 ± 68.1 ( 7 ) | 228.7 ± 63.2 ( 7 ) |
| 95 | 67.9 ± 8.4 ( 8 ) | 72 ± 8.8 ( 7 ) | 101.1 ± 24.7 ( 7 ) | 150.4 ± 51.8 ( 7 ) | 155.3 ± 49.8 ( 7 ) | 163.1 ± 49.3 ( 7 ) |

Table 5a. Open water mean concentrations as a function of depth (m), and standard deviations of Zn (ug/L) in L302N, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 6 | 9 | 11 | 13 |
|---|---|---|---|---|---|---|
| 87 | 2.3 ± 1 ( 11 ) | 2.1 ± 0.8 ( 6 ) | 1.8 ± 0.6 ( 6 ) | 1.7 ± 0.3 ( 6 ) | 1.7 ± 0.4 ( 7 ) | 1.7 ± 0.7 ( 6 ) |
| 88 | 2.9 ± 1.6 ( 23 ) | 2.4 ± 0.7 ( 6 ) | 2.3 ± 0.5 ( 6 ) | 2.3 ± 0.3 ( 6 ) | 2.3 ± 0.6 ( 5 ) | 2.9 ± 0.7 ( 6 ) |
| 89 | 3.9 ± 0.4 ( 11 ) | 4 ± 0.4 ( 7 ) | 3.7 ± 0.3 ( 6 ) | 3.1 ± 0.7 ( 5 ) | 3 ± 1 ( 7 ) | 2.5 ± 0.7 ( 6 ) |
| 91 | 1 ± 0.8 ( 5 ) | 0.6 ± 0.4 ( 2 ) | 1.6 ± 1.1 ( 2 ) | 0.8 ± 0.3 ( 2 ) | 0.5 ± 0.3 ( 2 ) | 1.2 ± 0.3 ( 2 ) |
| 92 | 4.1 ± 2.5 ( 11 ) | 3.8 ± 0.2 ( 5 ) | 4.2 ± 0.6 ( 5 ) | 2.9 ± 0.4 ( 5 ) | 1.7 ± 1.2 ( 6 ) | 1.3 ± 1.3 ( 6 ) |
| 93 | 2.7 ± 1 ( 20 ) | 3.6 ± 1.9 ( 8 ) | 2.5 ± 1.3 ( 6 ) | 1.7 ± 0.6 ( 6 ) | 1.6 ± 0.9 ( 6 ) | 2.1 ± 0.9 ( 7 ) |
| 94 | 3.1 ± 1.4 ( 12 ) | 2.5 ± 0.5 ( 6 ) | 2.8 ± 0.6 ( 6 ) | 3.1 ± 1 ( 6 ) | 2.7 ± 0.6 ( 6 ) | 3.1 ± 0.6 ( 6 ) |
| 95 | 2 ± 0.6 ( 8 ) | 1.6 ± 0.7 ( 7 ) | 2 ± 0.7 ( 7 ) | 2.2 ± 0.7 ( 6 ) | 2.3 ± 1 ( 7 ) | 2 ± 0.4 ( 6 ) |

Table 6a. Open water mean concentrations as a function of depth (m), and standard deviations of Al (ug/L) in L302S, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| 87 | 25.9 ± 2.8 ( 11 ) | 26.3 ± 1.9 ( 7 ) | 25.3 ± 3.5 ( 7 ) | 21.6 ± 7.6 ( 7 ) | 26.1 ± 10.7 ( 7 ) |
| 88 | 50.6 ± 6.3 ( 24 ) | 50.7 ± 6.9 ( 7 ) | 48.7 ± 5.2 ( 6 ) | 37.1 ± 16.3 ( 7 ) | 42.2 ± 6.7 ( 5 ) |
| 89 | 59.8 ± 9.7 ( 12 ) | 67.7 ± 17.6 ( 7 ) | 66.4 ± 14.7 ( 7 ) | 66.9 ± 15.9 ( 7 ) | 70.1 ± 21.4 ( 7 ) |
| 91 | 78.8 ± 13.2 ( 21 ) | 88.9 ± 11.8 ( 8 ) | 88 ± 14 ( 8 ) | 74.5 ± 21.4 ( 8 ) | 87.8 ± 7.7 ( 6 ) |
| 92 | 113.5 ± 32.8 ( 15 ) | 118.6 ± 20.1 ( 5 ) | 112.8 ± 72 ( 5 ) | 149.6 ± 55 ( 5 ) | 120.2 ± 86.2 ( 6 ) |
| 93 | 58.8 ± 30.5 ( 22 ) | 71 ± 18.2 ( 6 ) | 46 ± 24.4 ( 7 ) | 33.7 ± 22.7 ( 6 ) | 47.5 ± 11.5 ( 6 ) |
| 94 | 38.4 ± 7 ( 23 ) | 41.7 ± 10.4 ( 6 ) | 42 ± 6.8 ( 6 ) | 32.4 ± 15 ( 7 ) | 51.8 ± 8.9 ( 6 ) |
| 95 | 26.4 ± 11.1 ( 8 ) | 27 ± 12.4 ( 7 ) | 28 ± 13.3 ( 7 ) | 36 ± 15.2 ( 7 ) | 65.1 ± 35.5 ( 7 ) |
| 96 | 24.2 ± 9.2 ( 8 ) | 22.9 ± 5.3 ( 7 ) | 28.9 ± 5.1 ( 7 ) | 76.8 ± 30.5 ( 7 ) | 165.3 ± 77.8 ( 7 ) |

Table 6b. Open water mean concentrations as a function of depth (m), and standard deviations of Cu (ug/L) in L302S, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| 88 | 0.1 ± 0.2 ( 23 ) | 0.1 ± 0.1 ( 6 ) | 0.1 ± 0.1 ( 6 ) | 0 ± 0.1 ( 6 ) | 0 ± 0.1 ( 7 ) |
| 89 | 0 ± 0 ( 13 ) | 0 ± 0.1 ( 6 ) | 0 ± 0 ( 6 ) | 0.1 ± 0.1 ( 6 ) | 0 ± 0.1 ( 7 ) |
| 91 | 0.2 ± 0.3 ( 21 ) | 0 ± 0.1 ( 7 ) | 0.1 ± 0.2 ( 7 ) | 0 ± 0.1 ( 7 ) | 0.1 ± 0.1 ( 7 ) |
| 92 | 0.2 ± 0.2 ( 15 ) | 0.2 ± 0.2 ( 6 ) | 0.2 ± 0.1 ( 4 ) | 0.2 ± 0.1 ( 5 ) | 0.4 ± 0.1 ( 6 ) |
| 93 | 0.3 ± 0.3 ( 20 ) | 0.2 ± 0.2 ( 7 ) | 0.2 ± 0.3 ( 7 ) | 0.2 ± 0.2 ( 6 ) | 0.2 ± 0.2 ( 7 ) |
| 94 | 0.2 ± 0 ( 4 ) | 0.4 ± 0 ( 1 ) | 3 ± 2.4 ( 2 ) | 0.3 ± 0 ( 1 ) | 0.3 ± 0.1 ( 4 ) |
| 95 | 0.3 ± 0.2 ( 8 ) | 0.4 ± 0.2 ( 6 ) | 0.2 ± 0.2 ( 7 ) | 0.3 ± 0.1 ( 7 ) | 0.3 ± 0.2 ( 7 ) |
| 96 | 0 ± 0 ( 7 ) | 0 ± 0 ( 7 ) | 0.1 ± 0.2 ( 7 ) | 0.1 ± 0.1 ( 6 ) | 0.3 ± 0.2 ( 7 ) |

Table 6c. Open water mean concentrations as a function of depth (m), and standard deviations of Fe (ug/L) in L302S, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| 87 | 70.5 ± 39.5 ( 11 ) | 65.1 ± 35.1 ( 7 ) | 79.6 ± 46 ( 7 ) | 71.8 ± 31.7 ( 6 ) | 2073.4 ± 2323.9 ( 7 ) |
| 88 | 192.7 ± 86.4 ( 25 ) | 204.4 ± 98.2 ( 7 ) | 260 ± 104.5 ( 7 ) | 498.6 ± 273.5 ( 7 ) | 1858.6 ± 2345 ( 7 ) |
| 89 | 284.1 ± 195.6 ( 13 ) | 286.1 ± 169 ( 7 ) | 266 ± 130.1 ( 6 ) | 386.8 ± 189.9 ( 6 ) | 5041.4 ± 5186.6 ( 7 ) |
| 91 | 229.6 ± 47.6 ( 18 ) | 251.4 ± 51.6 ( 7 ) | 315.3 ± 66.7 ( 7 ) | 560.4 ± 234.7 ( 5 ) | 5768.6 ± 3972.3 ( 5 ) |
| 92 | 312.6 ± 144 ( 15 ) | 316.8 ± 230 ( 6 ) | 631 ± 67.9 ( 5 ) | 6007 ± 2963.4 ( 5 ) | 8424.8 ± 4242.7 ( 6 ) |
| 93 | 268.8 ± 88.4 ( 21 ) | 311.7 ± 138.6 ( 7 ) | 417.9 ± 101.4 ( 7 ) | 574.2 ± 195 ( 5 ) | 1985.2 ± 2179.1 ( 6 ) |
| 94 | 166.2 ± 120.8 ( 22 ) | 210.2 ± 61.5 ( 5 ) | 389.1 ± 248.8 ( 7 ) | 1007.2 ± 476.4 ( 6 ) | 2976.1 ± 14750.7 ( 7 ) |
| 95 | 180.4 ± 81.9 ( 7 ) | 165.2 ± 67.8 ( 6 ) | 384.3 ± 302.5 ( 7 ) | 1505.7 ± 928.1 ( 7 ) | 4684.2 ± 3957.7 ( 6 ) |
| 96 | 143 ± 86.3 ( 7 ) | 172.4 ± 117.4 ( 6 ) | 523.7 ± 388.6 ( 6 ) | 6134.1 ± 4752.1 ( 7 ) | 14459.1 ± 9165.7 ( 7 ) |

Table 6d. Open water mean concentrations as a function of depth (m), and standard deviations of Mn (ug/L) in L302S, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| 87 | 187.5 ± 15.3 ( 12 ) | 195 ± 5 ( 4 ) | 182.9 ± 11.6 ( 7 ) | 183.3 ± 13.7 ( 6 ) | 258.6 ± 65.8 ( 7 ) |
| 88 | 278.8 ± 70.4 ( 25 ) | 281.4 ± 75.9 ( 7 ) | 277.1 ± 74.6 ( 7 ) | 272.9 ± 77.4 ( 7 ) | 317.1 ± 76.1 ( 7 ) |
| 89 | 398.9 ± 65.5 ( 13 ) | 424.5 ± 37.3 ( 6 ) | 426.6 ± 38.5 ( 6 ) | 435.2 ± 32.8 ( 6 ) | 425.1 ± 42.1 ( 7 ) |
| 91 | 451.2 ± 19.1 ( 19 ) | 454.8 ± 4 ( 5 ) | 451.3 ± 7.5 ( 6 ) | 445 ± 17.4 ( 7 ) | 474.2 ± 58 ( 5 ) |
| 92 | 337.9 ± 22.4 ( 15 ) | 336.2 ± 35.3 ( 5 ) | 342.2 ± 24.3 ( 5 ) | 485 ± 89.4 ( 5 ) | 499.3 ± 107 ( 6 ) |
| 93 | 197.9 ± 17.5 ( 22 ) | 198 ± 17.1 ( 7 ) | 235.6 ± 28.9 ( 7 ) | 271 ± 61.5 ( 7 ) | 299.7 ± 87.1 ( 7 ) |
| 94 | 153.6 ± 17.4 ( 22 ) | 163 ± 29.9 ( 6 ) | 184.6 ± 38.8 ( 7 ) | 244.2 ± 21.7 ( 7 ) | 270.3 ± 96.7 ( 7 ) |
| 95 | 108 ± 10.6 ( 7 ) | 105.8 ± 6.6 ( 6 ) | 130.6 ± 27.1 ( 7 ) | 178.6 ± 50.7 ( 7 ) | 205.6 ± 72.3 ( 7 ) |
| 96 | 67.7 ± 10.5 ( 6 ) | 77.4 ± 23.3 ( 7 ) | 156.3 ± 62.7 ( 7 ) | 413.8 ± 219.1 ( 7 ) | 565.2 ± 274.8 ( 7 ) |

Table 6e. Open water mean concentrations as a function of depth (m), and standard deviations of Zn (ug/L) in L302S, with sample size in parenthesis.

| Year/Depth | 1 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|
| 87 | 4.2 ± 0.8 ( 11 ) | 3.9 ± 0.8 ( 7 ) | 3.6 ± 0.8 ( 7 ) | 3.1 ± 0.6 ( 6 ) | 2.9 ± 1.3 ( 6 ) |
| 88 | 4.4 ± 1.2 ( 21 ) | 3.8 ± 0.7 ( 7 ) | 3.9 ± 1.1 ( 7 ) | 3.3 ± 1.9 ( 7 ) | 2.7 ± 1.2 ( 6 ) |
| 89 | 5.2 ± 0.9 ( 13 ) | 5.5 ± 1.5 ( 6 ) | 7.2 ± 2.2 ( 7 ) | 7.6 ± 1.9 ( 7 ) | 6.2 ± 1.5 ( 7 ) |
| 91 | 2.9 ± 1.5 ( 20 ) | 3.9 ± 1.7 ( 8 ) | 4.6 ± 0.9 ( 8 ) | 3.3 ± 1.5 ( 8 ) | 2.2 ± 1.4 ( 7 ) |
| 92 | 5.8 ± 2.1 ( 15 ) | 4.1 ± 2.1 ( 6 ) | 4.8 ± 1.1 ( 5 ) | 2.3 ± 1.3 ( 5 ) | 2.7 ± 2.1 ( 6 ) |
| 93 | 3 ± 0.7 ( 20 ) | 2.8 ± 1.8 ( 7 ) | 2.2 ± 1.2 ( 7 ) | 3.2 ± 2.6 ( 7 ) | 2.4 ± 0.5 ( 7 ) |
| 94 | 4.3 ± 1 ( 21 ) | 4.6 ± 1.4 ( 6 ) | 4.4 ± 1.2 ( 6 ) | 3.8 ± 1 ( 6 ) | 4.1 ± 0.7 ( 6 ) |
| 95 | 2 ± 0.4 ( 7 ) | 2.3 ± 0.5 ( 6 ) | 2.4 ± 0.5 ( 7 ) | 2.5 ± 0.9 ( 7 ) | 2.9 ± 0.9 ( 7 ) |
| 96 | 1.5 ± 0.5 ( 7 ) | 2.4 ± 1.3 ( 7 ) | 2.2 ± 0.8 ( 7 ) | 1.7 ± 0.4 ( 6 ) | 2.1 ± 1.7 ( 7 ) |

Table 7a. Open water mean concentrations as a function of depth (m), and standard deviations of Al (ug/L) in L226N, with sample size in parenthesis.

| Year/Depth | 1 | 3 | 5 | 8 | 11 |
|---|---|---|---|---|---|
| 95 | 20.2 ± 16.6 ( 6 ) | 19.2 ± 11.6 ( 5 ) | 24 ± 11.6 ( 5 ) | 38.8 ± 3.9 ( 5 ) | 59.8 ± 4.2 ( 5 ) |
| 96 | 23.9 ± 8.8 ( 9 ) | 25 ± 9.5 ( 10 ) | 38.3 ± 22.4 ( 11 ) | 52.9 ± 8.6 ( 10 ) | 59.2 ± 9.6 ( 10 ) |

Table 7b. Open water mean concentrations as a function of depth (m), and standard deviations of Cu (ug/L) in L226N, with sample size in parenthesis.

| Year/Depth | 1 | 3 | 5 | 8 | 11 |
|---|---|---|---|---|---|
| 95 | 0.3 ± 0.2 ( 6 ) | 0.3 ± 0.2 ( 5 ) | 0.2 ± 0.2 ( 5 ) | 0.3 ± 0.3 ( 5 ) | 0.3 ± 0.2 ( 5 ) |
| 96 | 0.3 ± 0.4 ( 10 ) | 0.1 ± 0.2 ( 10 ) | 0.2 ± 0.5 ( 10 ) | 0.1 ± 0.2 ( 11 ) | 0.2 ± 0.2 ( 11 ) |

Table 7c. Open water mean concentrations as a function of depth (m), and standard deviations of Fe (ug/L) in L226N, with sample size in parenthesis.

| Year/Depth | 1 | 3 | 5 | 8 | 11 |
|---|---|---|---|---|---|
| 95 | 52.8 ± 9.2 ( 5 ) | 52.2 ± 10.2 ( 5 ) | 71.2 ± 5.5 ( 5 ) | 431.6 ± 274 ( 5 ) | 2919.6 ± 490.4 ( 5 ) |
| 96 | 83 ± 54.6 ( 9 ) | 59.9 ± 7.1 ( 9 ) | 78.4 ± 20.5 ( 10 ) | 350.6 ± 151.9 ( 11 ) | 2999.7 ± 1037.3 ( 10 ) |

Table 7d. Open water mean concentrations as a function of depth (m), and standard deviations of Mn (ug/L) in L226N, with sample size in parenthesis.

| Year/Depth | 1 | 3 | 5 | 8 | 11 |
|---|---|---|---|---|---|
| 95 | 22.2 ± 10.5 ( 6 ) | 27.2 ± 14.4 ( 5 ) | 25.4 ± 15.5 ( 5 ) | 377 ± 260.4 ( 5 ) | 638 ± 52.6 ( 5 ) |
| 96 | 41.9 ± 22 ( 10 ) | 30.8 ± 5.2 ( 9 ) | 37.9 ± 9.1 ( 10 ) | 488.1 ± 274.9 ( 11 ) | 850 ± 385.9 ( 11 ) |

Table 7e. Open water mean concentrations as a function of depth (m), and standard deviations of Zn (ug/L) in L226N, with sample size in parenthesis.

| Year/Depth | 1 | 3 | 5 | 8 | 11 |
|---|---|---|---|---|---|
| 95 | 1.1 ± 0.6 ( 6 ) | 0.9 ± 0.4 ( 5 ) | 1 ± 0.8 ( 5 ) | 2.8 ± 1.3 ( 5 ) | 2.1 ± 0.6 ( 5 ) |
| 96 | 0.9 ± 0.3 ( 10 ) | 0.9 ± 0.5 ( 10 ) | 1.1 ± 0.4 ( 11 ) | 2.4 ± 1.2 ( 11 ) | 1.7 ± 0.7 ( 10 ) |

Table 8a. Open water mean concentrations as a function of depth (m), and standard deviations of Al (ug/L) in L226S, with sample size in parenthesis.

| Year/Depth | 1 | 3 | 5 | 8 |
|---|---|---|---|---|
| 95 | 16.3 ± 6 ( 6 ) | 14.4 ± 6.4 ( 5 ) | 21.4 ± 8 ( 5 ) | 39 ± 3.6 ( 5 ) |
| 96 | 18 ± 2.5 ( 9 ) | 16.5 ± 6.3 ( 9 ) | 28.7 ± 12.5 ( 10 ) | 46.8 ± 8.9 ( 10 ) |

**Table 8b. Open water mean concentrations as a function of depth (m), and standard deviations of Cu (ug/L) in L226S, with sample size in parenthesis.**

| Year/Depth | 1 | 3 | 5 | 8 |
|---|---|---|---|---|
| 95 | 0.2 ± 0.1 ( 5 ) | 0.2 ± 0.2 ( 4 ) | 0.1 ± 0.1 ( 3 ) | 0.3 ± 0.2 ( 4 ) |
| 96 | 0.2 ± 0.2 ( 10 ) | 0.1 ± 0.2 ( 10 ) | 0 ± 0.1 ( 9 ) | 0.1 ± 0.1 ( 9 ) |

**Table 8c. Open water mean concentrations as a function of depth (m), and standard deviations of Fe (ug/L) in L226S, with sample size in parenthesis.**

| Year/Depth | 1 | 3 | 5 | 8 |
|---|---|---|---|---|
| 95 | 55.7 ± 13.7 ( 6 ) | 50 ± 6.6 ( 5 ) | 76 ± 14 ( 5 ) | 1251.2 ± 676.6 ( 5 ) |
| 96 | 58.5 ± 10.8 ( 9 ) | 53.6 ± 21.9 ( 9 ) | 109.8 ± 60.5 ( 11 ) | 2013.7 ± 1349.4 ( 11 ) |

**Table 8d. Open water mean concentrations as a function of depth (m), and standard deviations of Mn (ug/L) in L226S, with sample size in parenthesis.**

| Year/Depth | 1 | 3 | 5 | 8 |
|---|---|---|---|---|
| 95 | 22.2 ± 3.9 ( 5 ) | 21.4 ± 14 ( 5 ) | 20.6 ± 14.4 ( 5 ) | 769.4 ± 172.8 ( 5 ) |
| 96 | 30 ± 6.9 ( 9 ) | 26.9 ± 10.7 ( 9 ) | 47.7 ± 22 ( 11 ) | 928.4 ± 347.9 ( 11 ) |

**Table 8e. Open water mean concentrations as a function of depth (m), and standard deviations of Zn (ug/L) in L226S, with sample size in parenthesis.**

| Year/Depth | 1 | 3 | 5 | 8 |
|---|---|---|---|---|
| 95 | 0.8 ± 0.1 ( 5 ) | 1 ± 0.7 ( 4 ) | 0.8 ± 0.6 ( 5 ) | 2.1 ± 1 ( 2 ) |
| 96 | 0.7 ± 0.2 ( 10 ) | 0.7 ± 0.3 ( 9 ) | 0.9 ± 0.3 ( 10 ) | 1.8 ± 0.8 ( 11 ) |

**Table 9a. Open water mean concentrations as a function of depth (m), and standard deviations of Al (ug/L) in L239 streams, with sample size in parenthesis.**

| Year/Depth | EIF | NE@LA | NEIF | NWIF | OF |
|---|---|---|---|---|---|
| 87 | 273.3 ± 114.3 ( 6 ) | 666 ± 52.8 ( 5 ) | 453.8 ± 112.2 ( 8 ) | 370 ± 59 ( 7 ) | 35.5 ± 7.1 ( 11 ) |
| 88 | 296.7 ± 91.4 ( 9 ) | 562.5 ± 105.8 ( 8 ) | 343.3 ± 60.7 ( 12 ) | 368.3 ± 78.2 ( 12 ) | 50.9 ± 10.5 ( 15 ) |
| 89 | 384.2 ± 128.7 ( 12 ) | 476.7 ± 187.9 ( 9 ) | 361.7 ± 103.3 ( 12 ) | 373.3 ± 108.1 ( 15 ) | 48.4 ± 8.8 ( 16 ) |

EIF - east inflow
NE@LA - northeast at lake
NEIF - northeast inflow
NWIF - northwest inflow
OF - outflow

Table 9b. Open water mean concentrations as a function of depth (m), and standard deviations of Cu (ug/L) in L239 streams, with sample size in paraenthesis.

| Year/Depth | EIF | NE@LA | NEIF | NWIF | OF |
|---|---|---|---|---|---|
| 88 | 0.3 ± 0.3 ( 10 ) | 0.3 ± 0.3 ( 8 ) | 0.1 ± 0.2 ( 12 ) | 0.2 ± 0.2 ( 12 ) | 0.1 ± 0.1 ( 14 ) |
| 89 | 0.6 ± 0.2 ( 12 ) | 0.5 ± 0.1 ( 9 ) | 0.2 ± 0.1 ( 12 ) | 0.4 ± 0.2 ( 15 ) | 0.2 ± 0.1 ( 16 ) |

Table 9c. Open water mean concentrations as a function of depth (m), and standard deviations of Fe (ug/L) in L239 streams, with sample size in paraenthesis.

| Year/Depth | EIF | NE@LA | NEIF | NWIF | OF |
|---|---|---|---|---|---|
| 87 | 411.7 ± 122.1 ( 6 ) | 984 ± 52.8 ( 5 ) | 738.8 ± 106.8 ( 8 ) | 438.6 ± 83.2 ( 7 ) | 7.3 ± 4.5 ( 11 ) |
| 88 | 419 ± 156.9 ( 10 ) | 871.3 ± 166.1 ( 8 ) | 664.2 ± 107.1 ( 12 ) | 386.7 ± 83.9 ( 12 ) | 29.3 ± 13.3 ( 14 ) |
| 89 | 586.4 ± 172.1 ( 11 ) | 885.6 ± 152 ( 9 ) | 695.5 ± 141.7 ( 11 ) | 488.6 ± 166 ( 14 ) | 36.7 ± 5.9 ( 14 ) |

Table 9d. Open water mean concentrations as a function of depth (m), and standard deviations of Mn (ug/L) in L239 streams, with sample size in paraenthesis.

| Year/Depth | EIF | NE@LA | NEIF | NWIF | OF |
|---|---|---|---|---|---|
| 87 | 6.7 ± 2.3 ( 6 ) | 48.8 ± 11 ( 5 ) | 37.6 ± 15.1 ( 8 ) | 9 ± 1.7 ( 6 ) | 0.2 ± 0.4 ( 10 ) |
| 88 | 6 ± 6.9 ( 9 ) | 53 ± 20.3 ( 7 ) | 35.7 ± 20.7 ( 11 ) | 21.8 ± 6.5 ( 12 ) | 2.6 ± 1.8 ( 14 ) |
| 89 | 128.5 ± 175.9 ( 12 ) | 239.7 ± 275.2 ( 9 ) | 165.8 ± 220.5 ( 12 ) | 95.9 ± 149.1 ( 15 ) | 3.3 ± 1.7 ( 16 ) |

Table 9e. Open water mean concentrations as a function of depth (m), and standard deviations of Zn (ug/L) in L239 streams, with sample size in paraenthesis.

| Year/Depth | EIF | NE@LA | NEIF | NWIF | OF |
|---|---|---|---|---|---|
| 87 | 2.8 ± 1.5 ( 6 ) | 6.3 ± 1.6 ( 5 ) | 7.1 ± 1.8 ( 7 ) | 4.6 ± 3.8 ( 7 ) | 0.8 ± 0.3 ( 10 ) |
| 88 | 3.4 ± 1.7 ( 9 ) | 7 ± 1.4 ( 8 ) | 7 ± 4.3 ( 11 ) | 3.6 ± 3.5 ( 12 ) | 0.6 ± 0.3 ( 14 ) |
| 89 | 6.8 ± 5.5 ( 11 ) | 8.9 ± 0.8 ( 9 ) | 9.6 ± 2.2 ( 11 ) | 8.3 ± 9.8 ( 14 ) | 0.6 ± 0.2 ( 15 ) |

EIF - east inflow
NE@LA - northeast at lake
NEIF - northeast inflow
NWIF - northwest inflow
OF - outflow

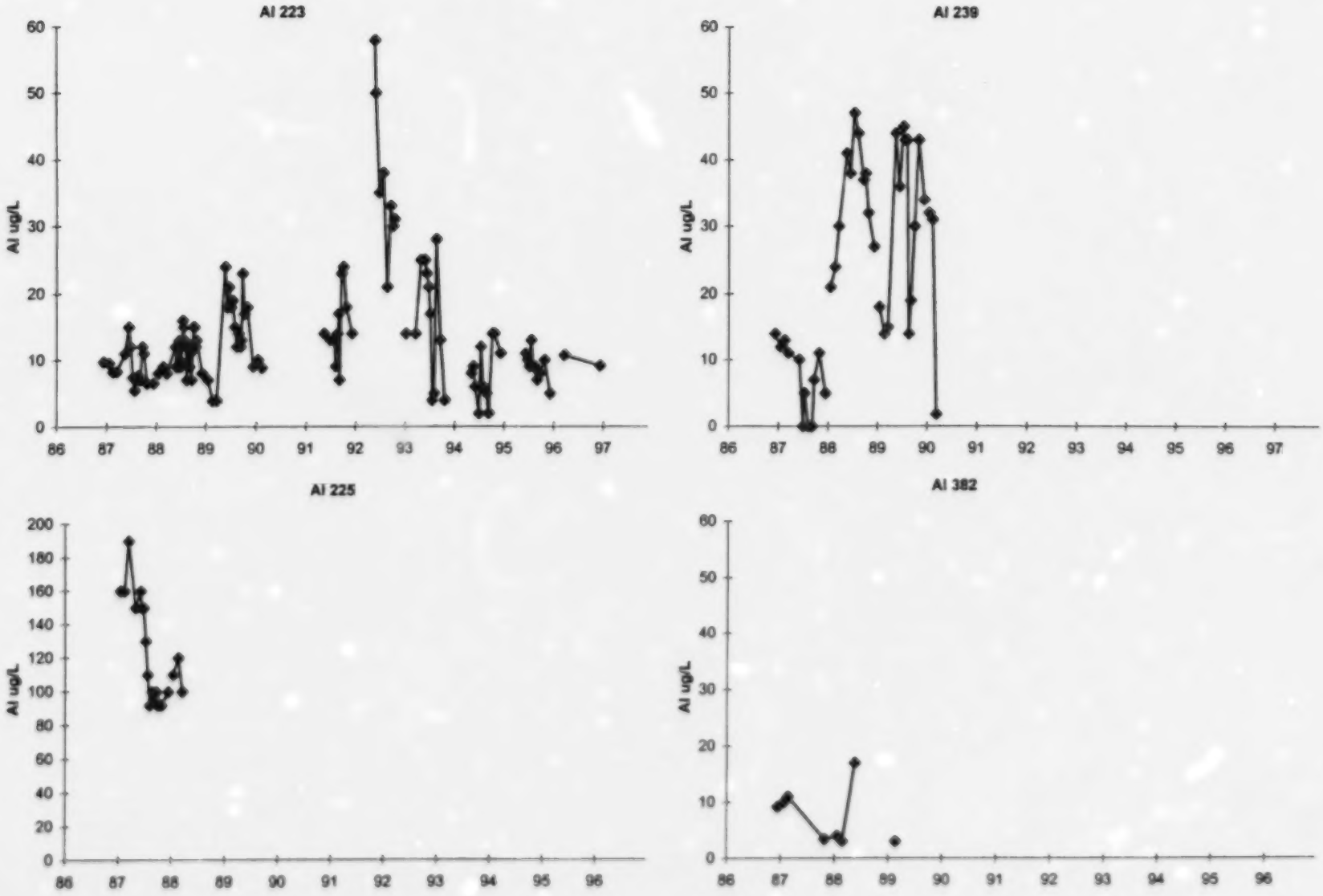



Fig. 1.1 Concentrations of Al at 1 m depth in L223, 239, 225, 382.

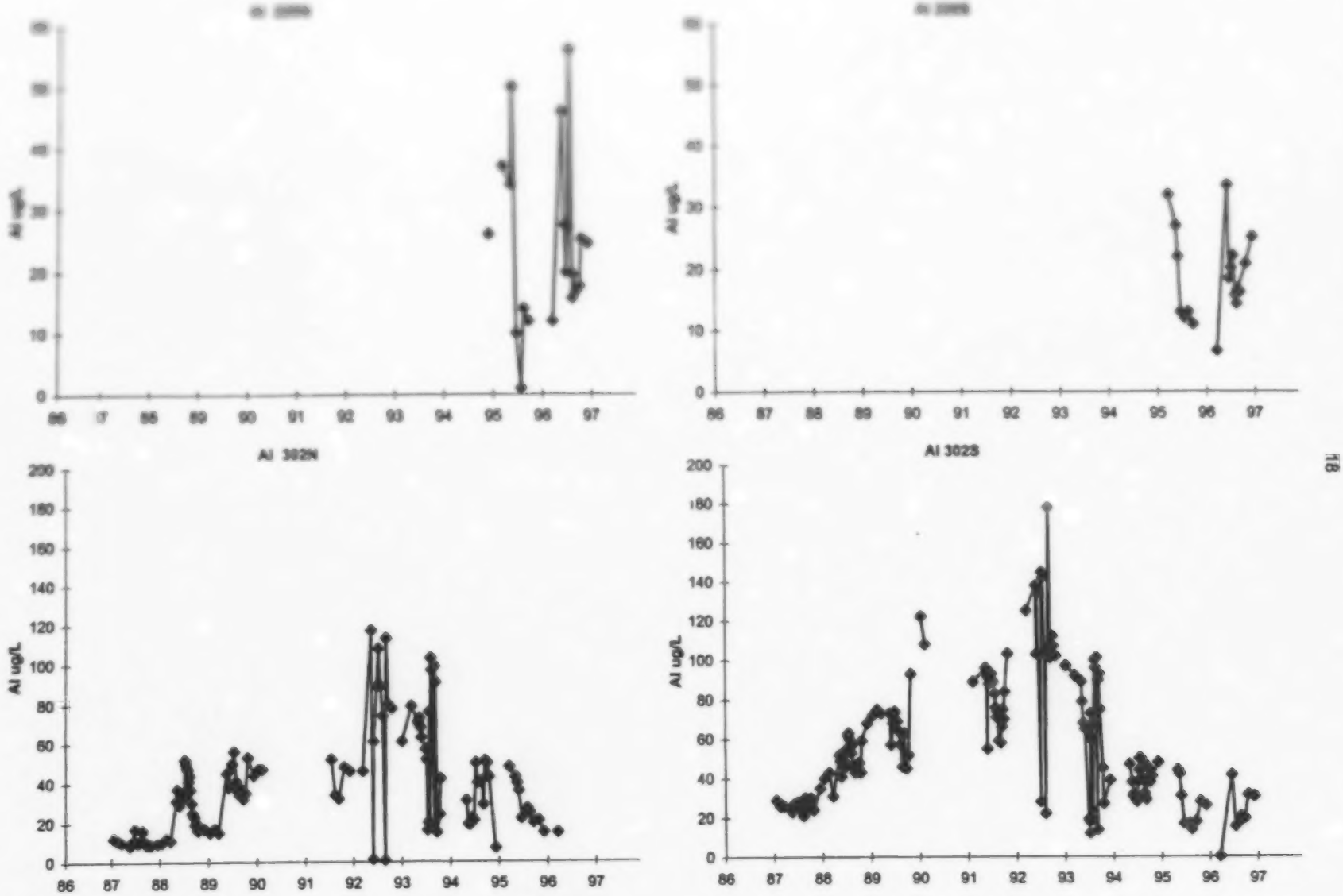



Fig. 1.2. Concentrations of Al at 1 m depth in L226N, 226S, 302N, 302S.

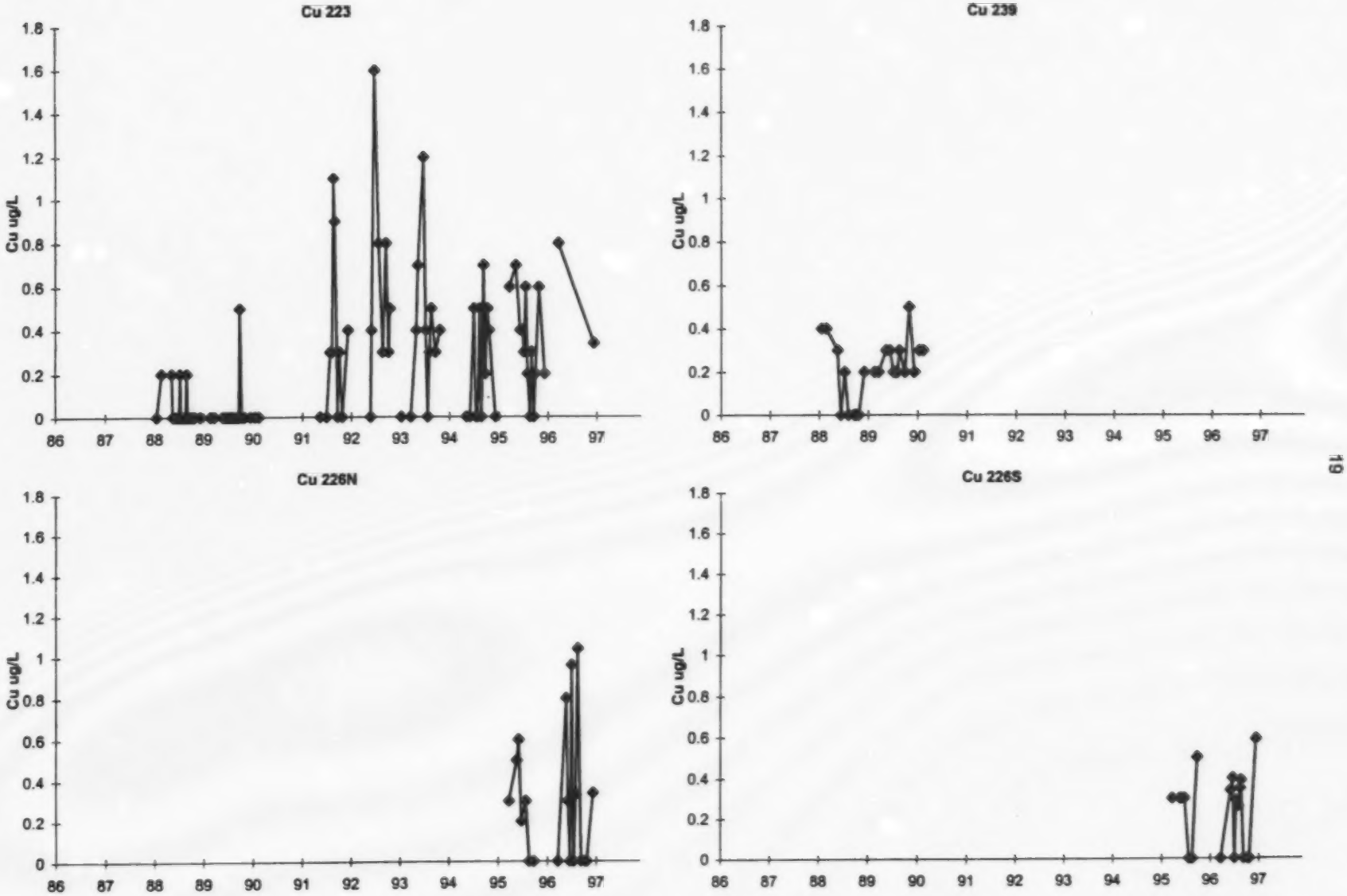
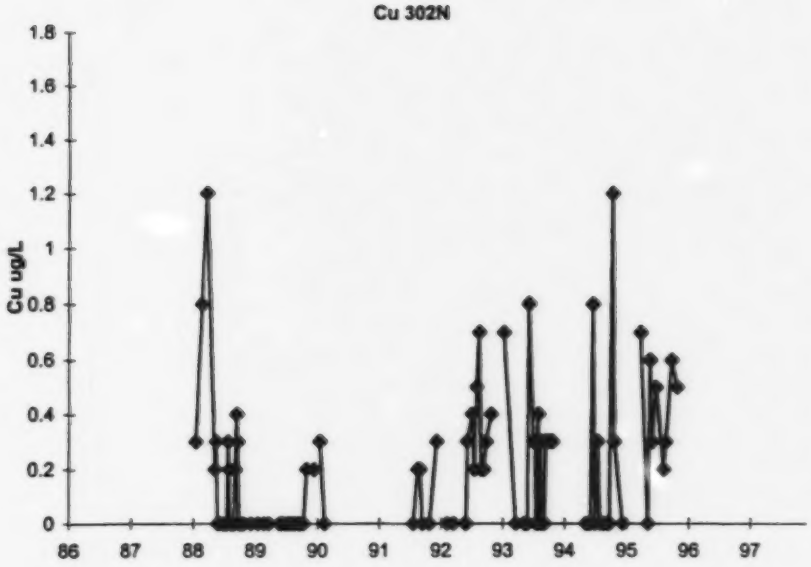



Fig. 1.3. Concentrations of Cu at 1 m depth in L223, 239, 226N, 226S.



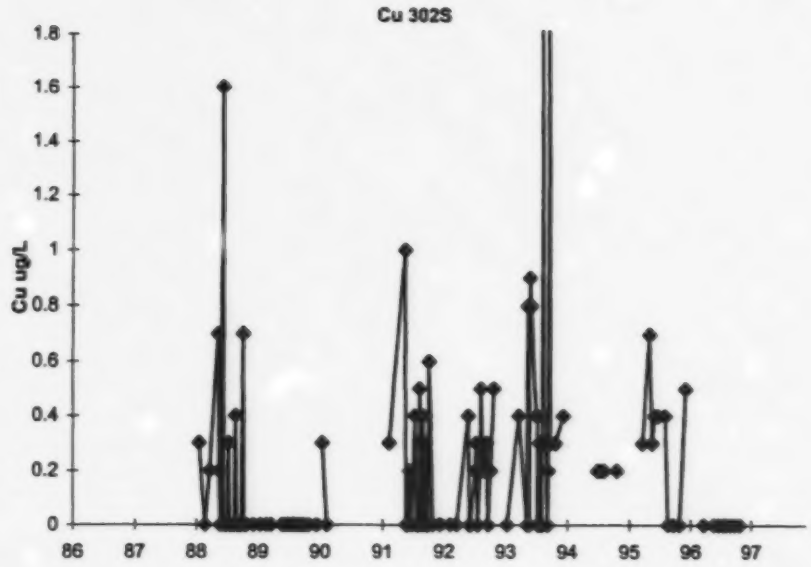
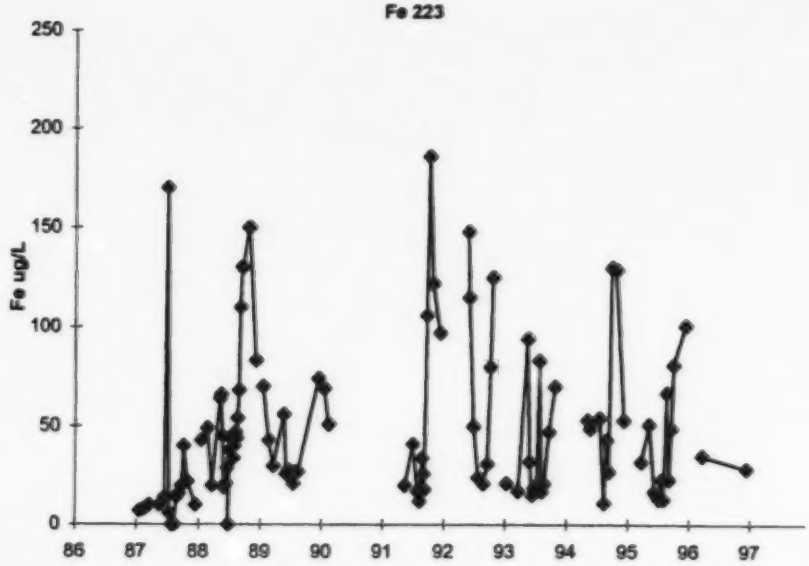
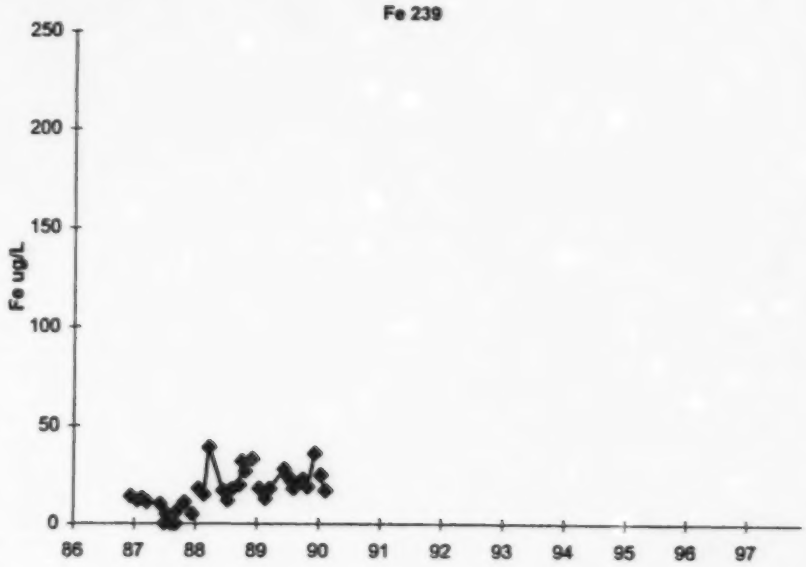
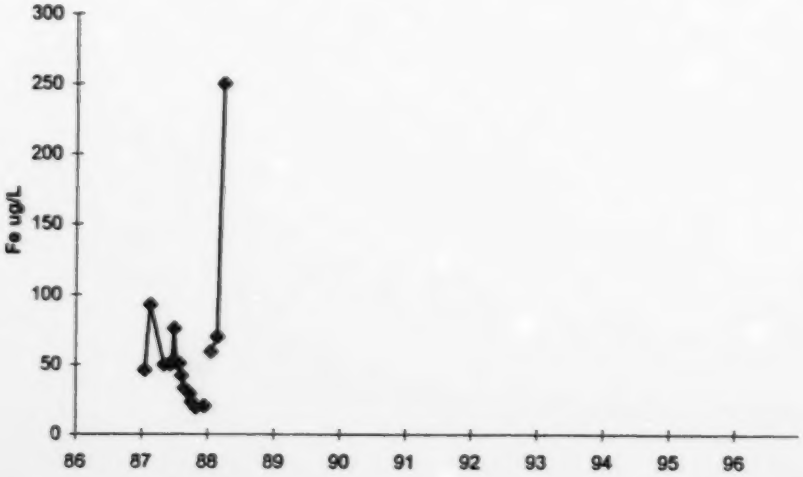






Fig. 1.4. Concentrations of Cu at 1 m depth in L302N, 302S.



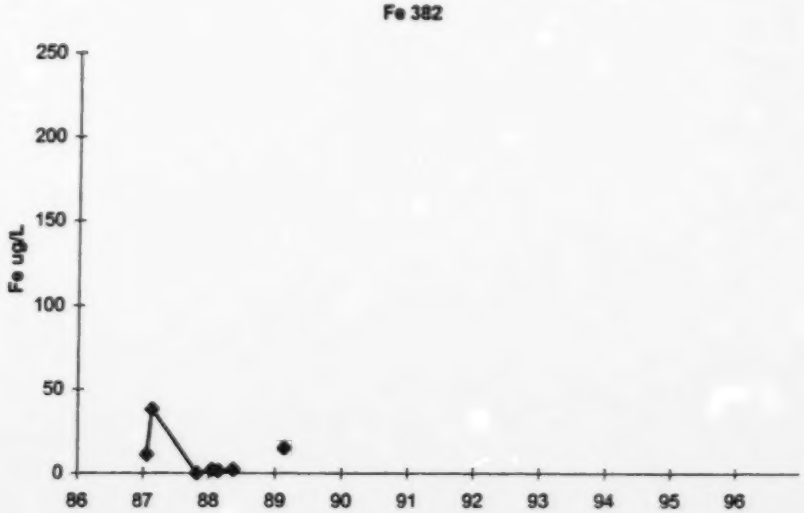




Fig. 1.5. Concentrations of Fe at 1 m depth in L223, 239, 225, 382.

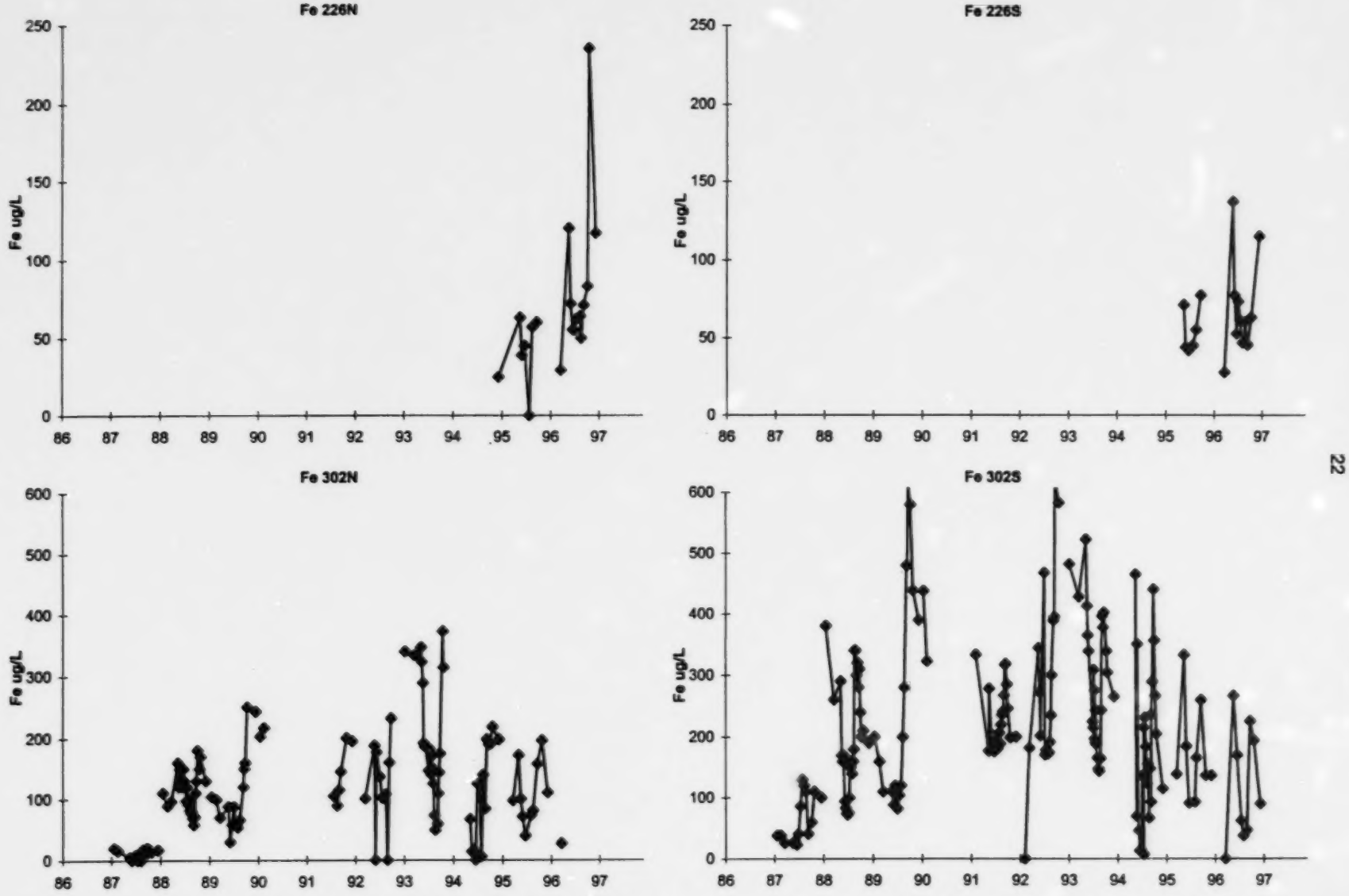



Fig. 1.6. Concentrations of Fe at 1 m depth in L226N, 226S, 302N, 302S.

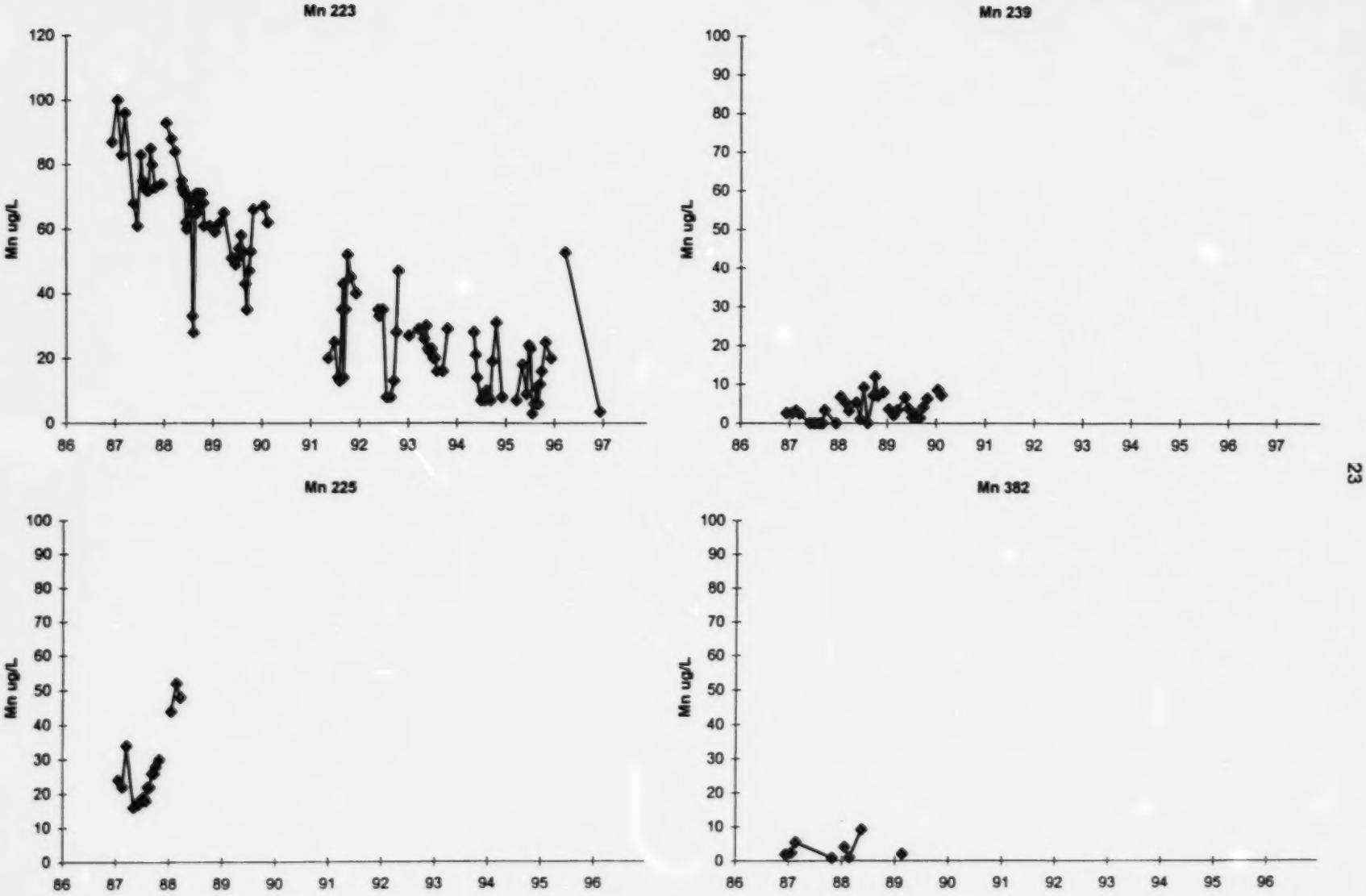



Fig.1.7. Concentrations of Mn at 1 m depth in L223, 239, 225, 382.

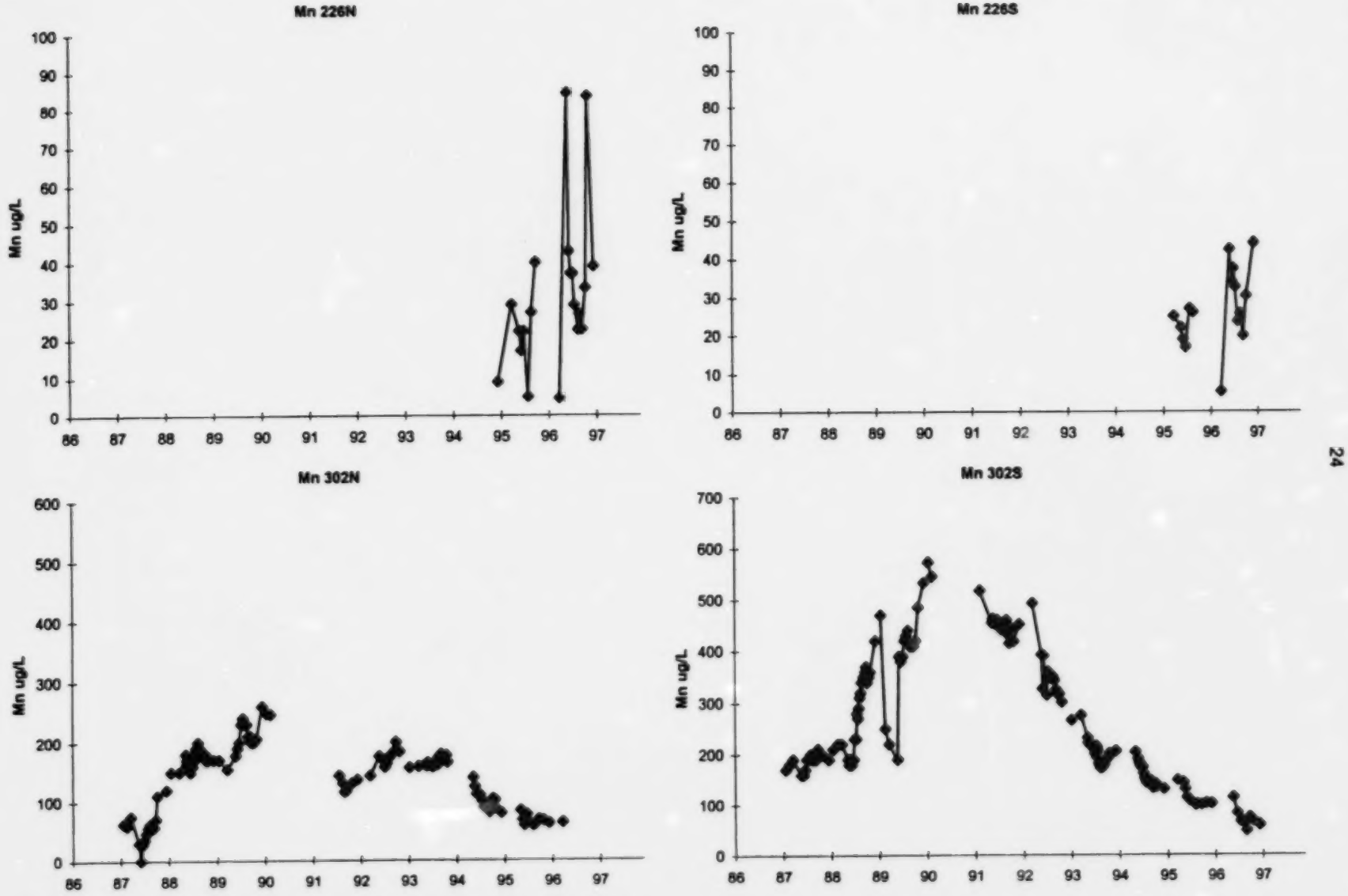



Fig. 1.8. Concentrations of Mn at 1 m depth in L226N, 226S, 302N, 302S.

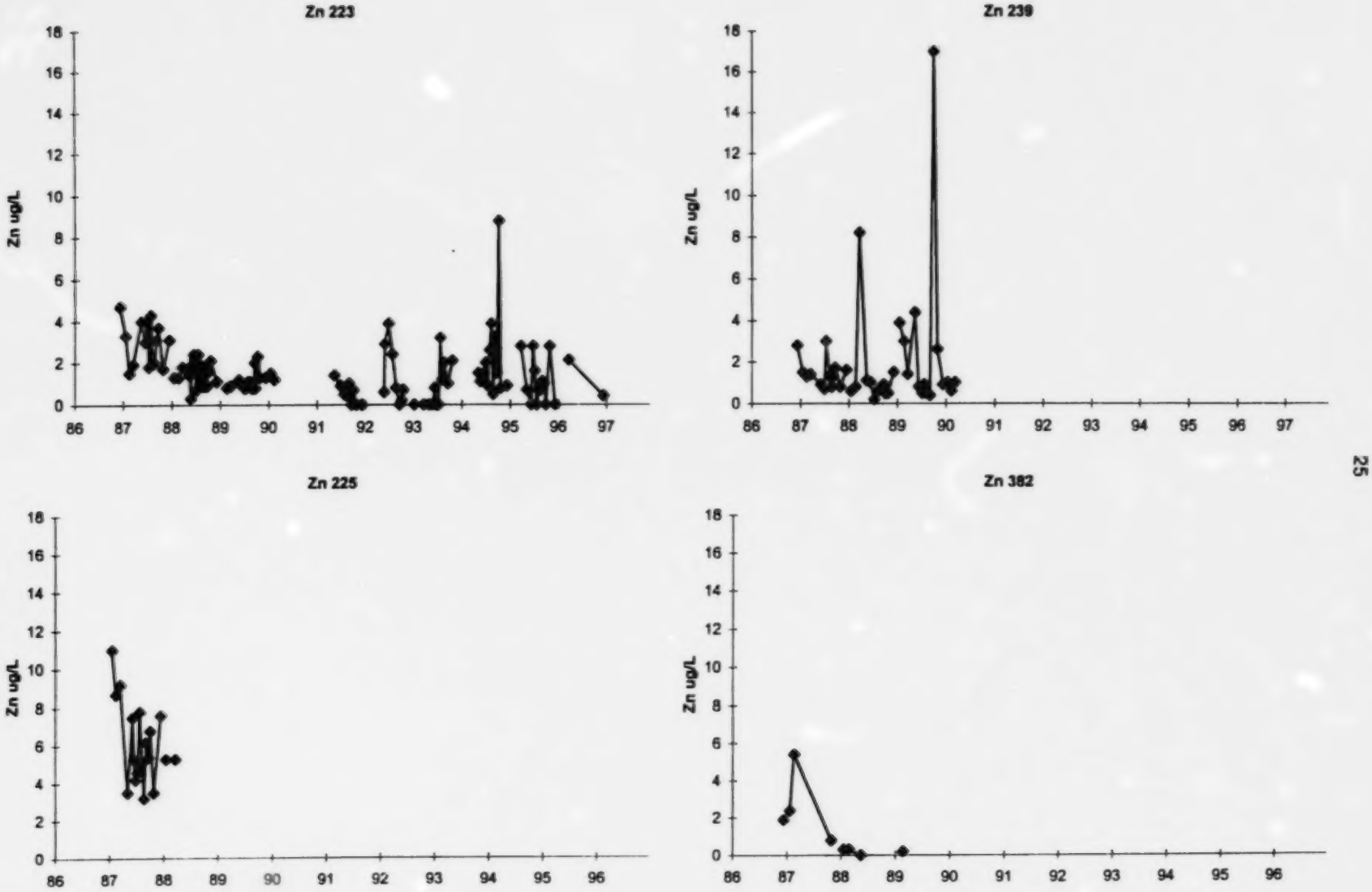



Fig. 1.9. Concentrations of Zn at 1 m depth in L223, 239, 225, 382.

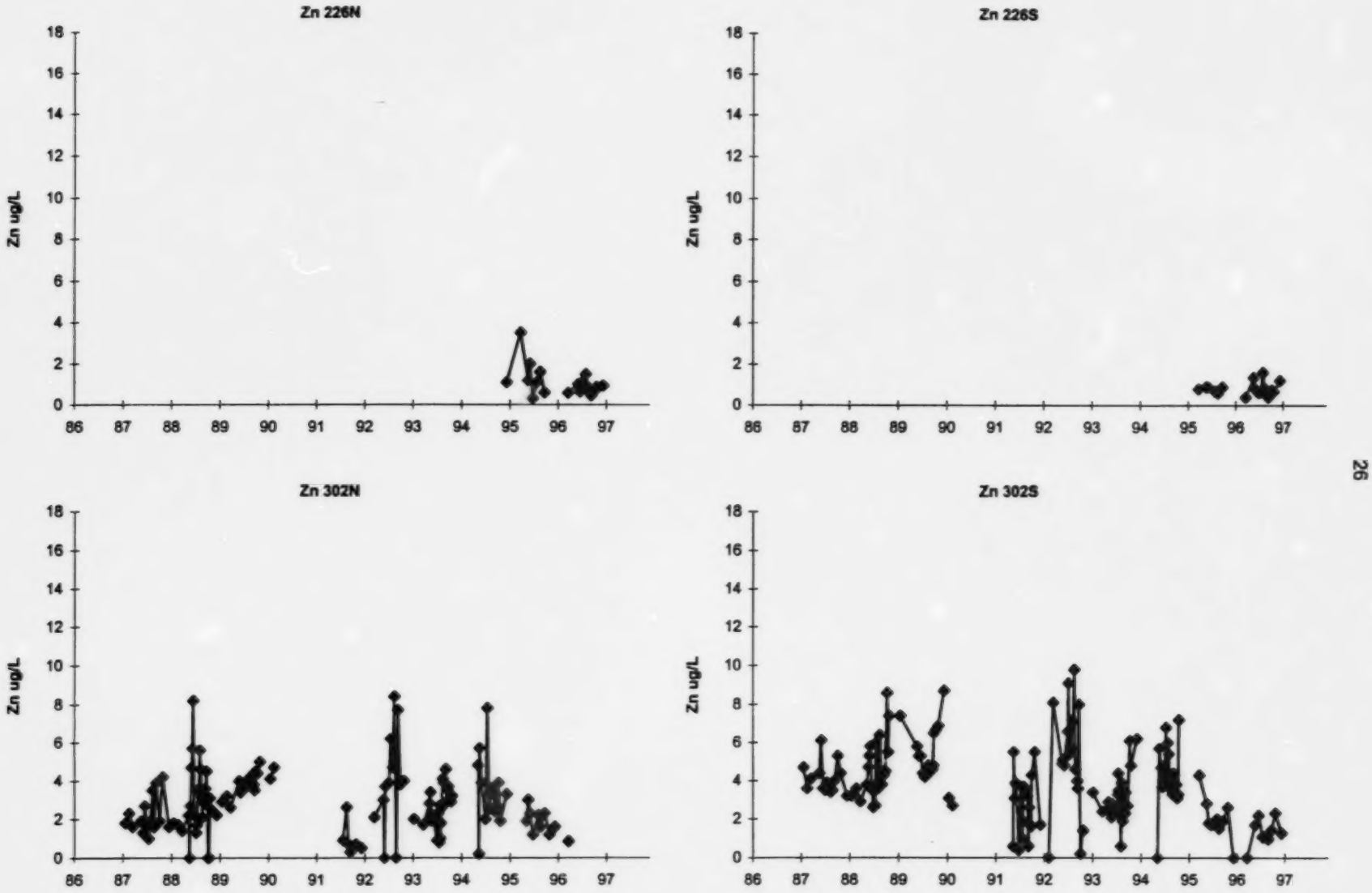



Fig. 1.10. Concentrations of Zn at 1 m depth in L226N, 226S, 302N, 302S.

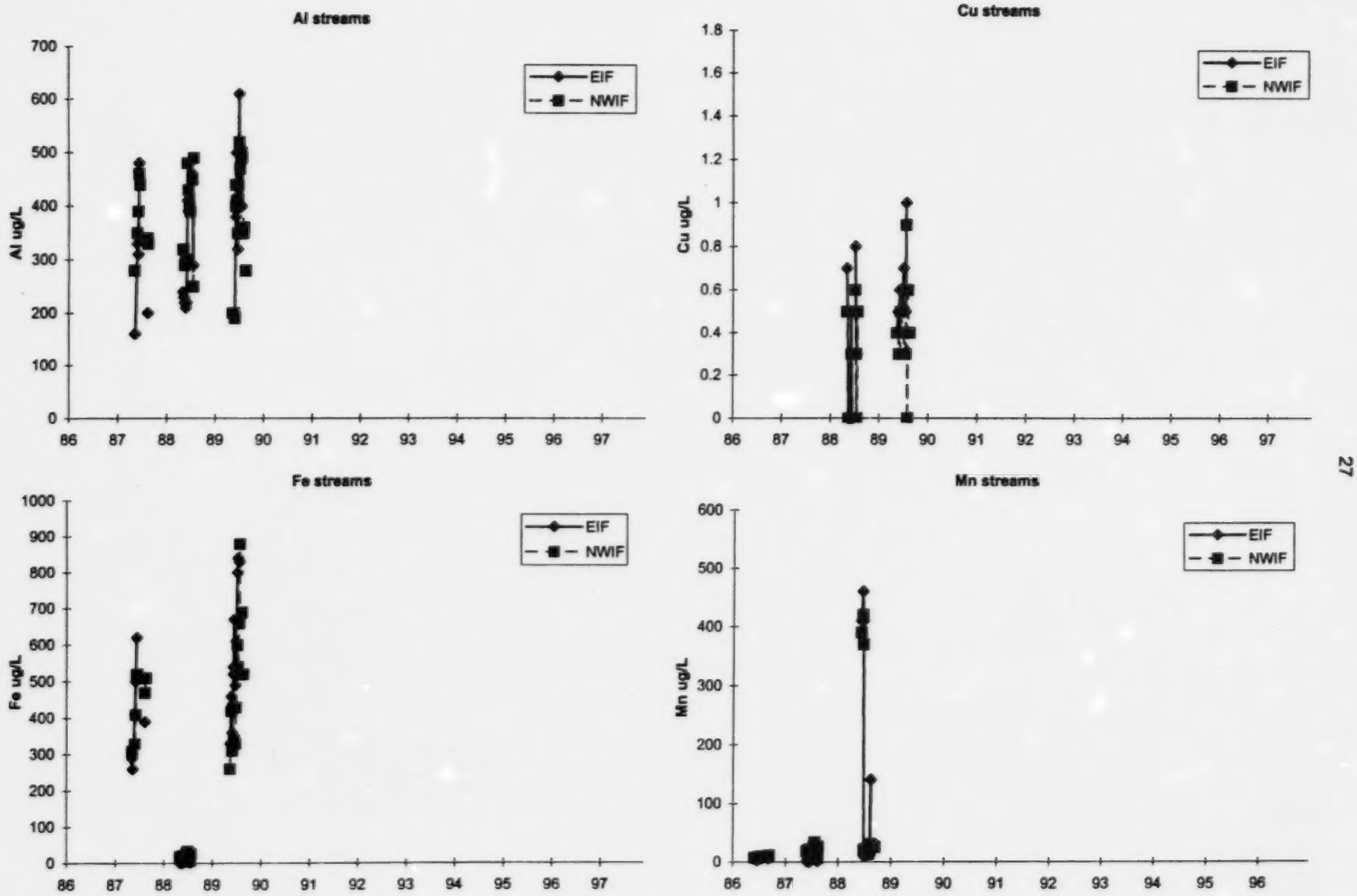



Fig. 1.11. Concentrations of Al, Cu, Fe, Mn at 1 m depth in L239 EIF, NWIF.

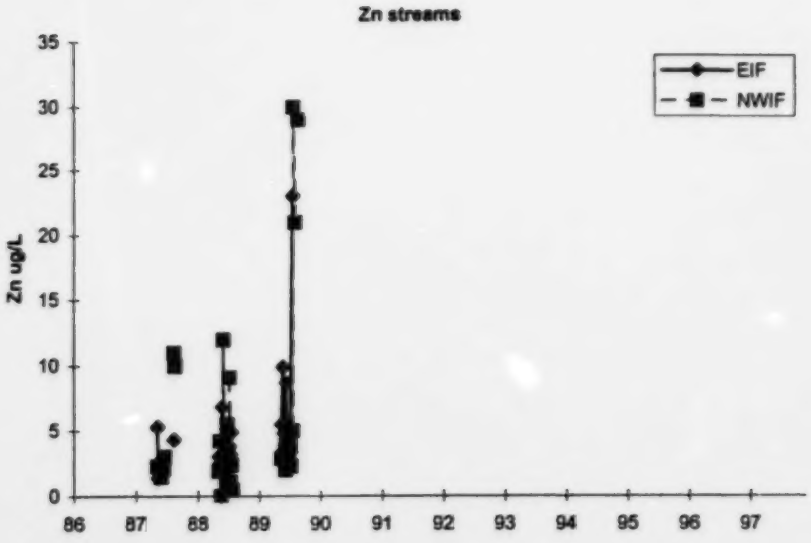
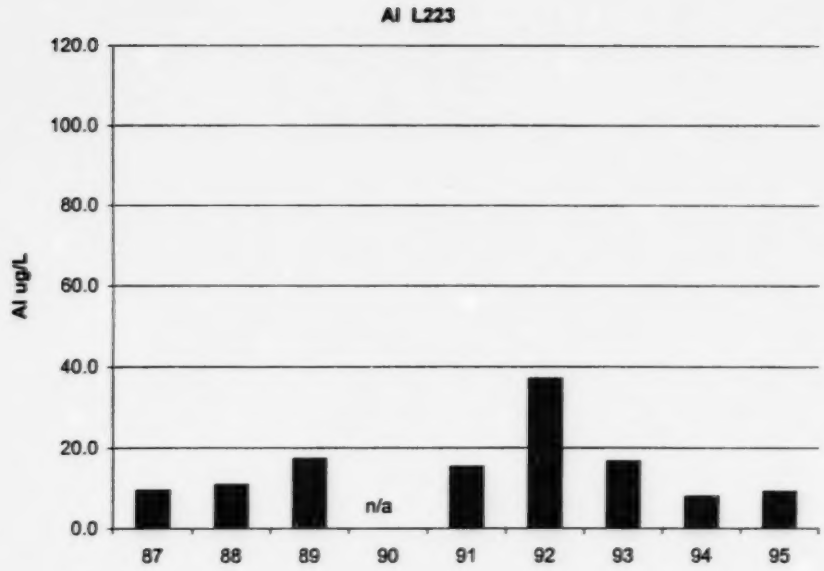
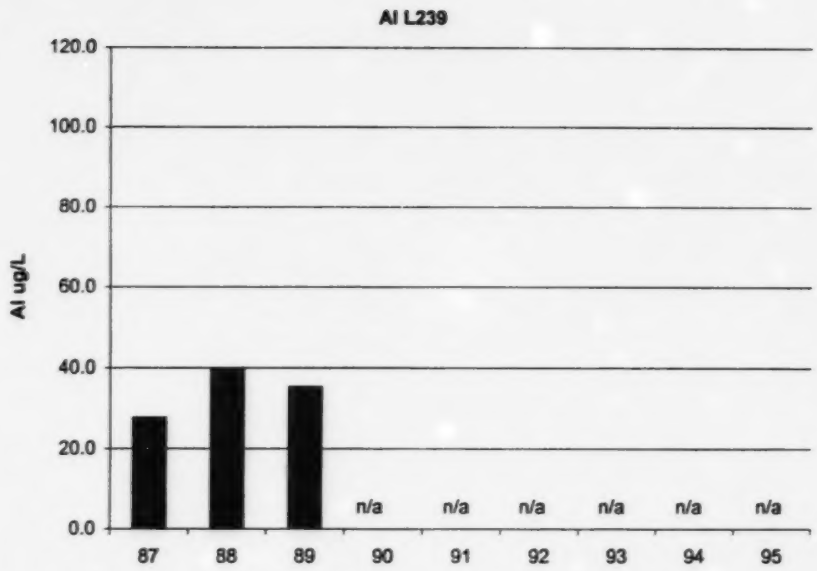
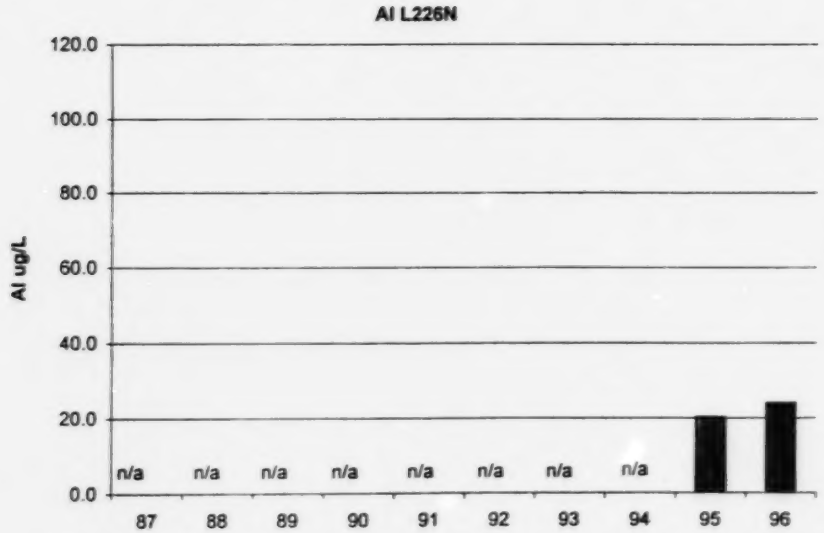



Fig. 1.12. Concentrations of Zn at 1 m depth in L239 EIF, NWIF.



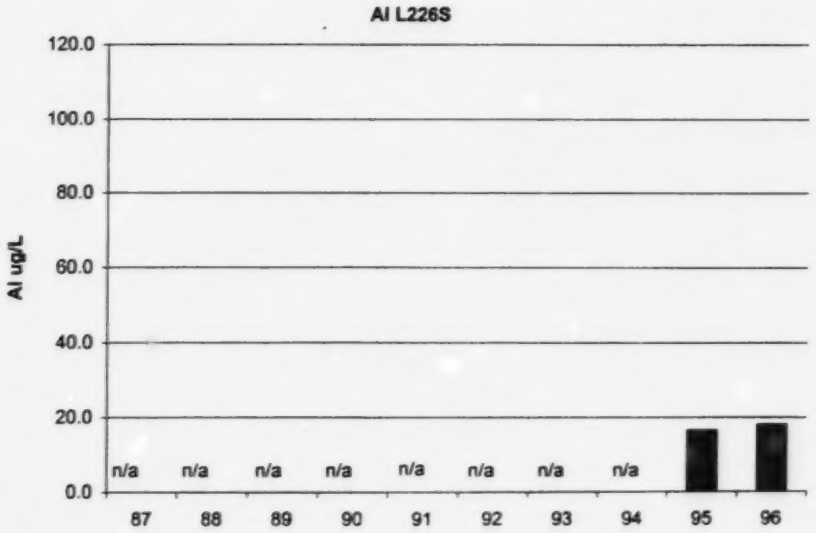




Fig. 2.1. Open water mean concentrations at 1 m depth of Al in L223, 239, 226N, 226S.

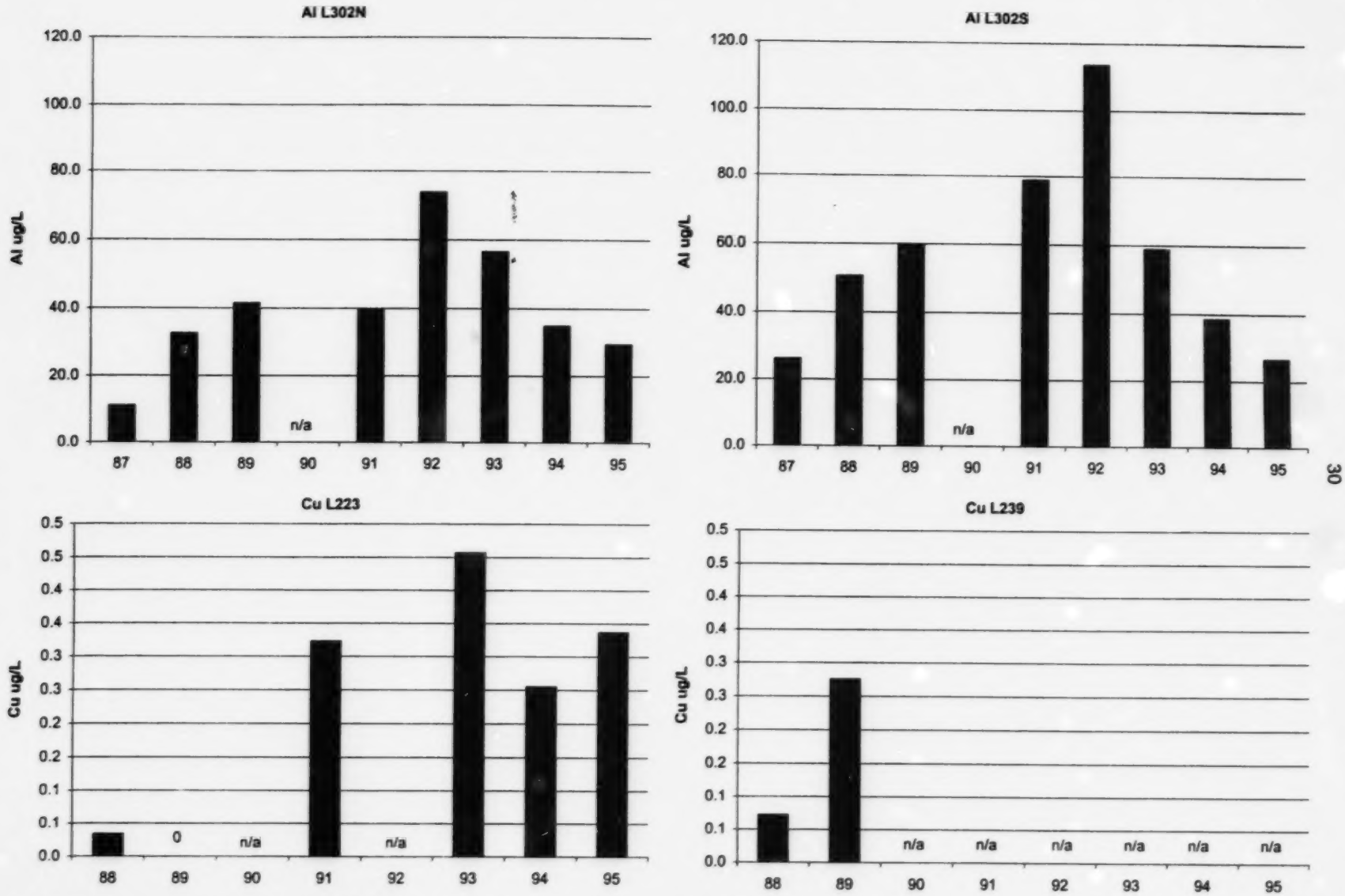



Fig. 2.2. Open water mean concentrations at 1 m depth of Al in L302N, 302S, and of Cu in L223, 239.

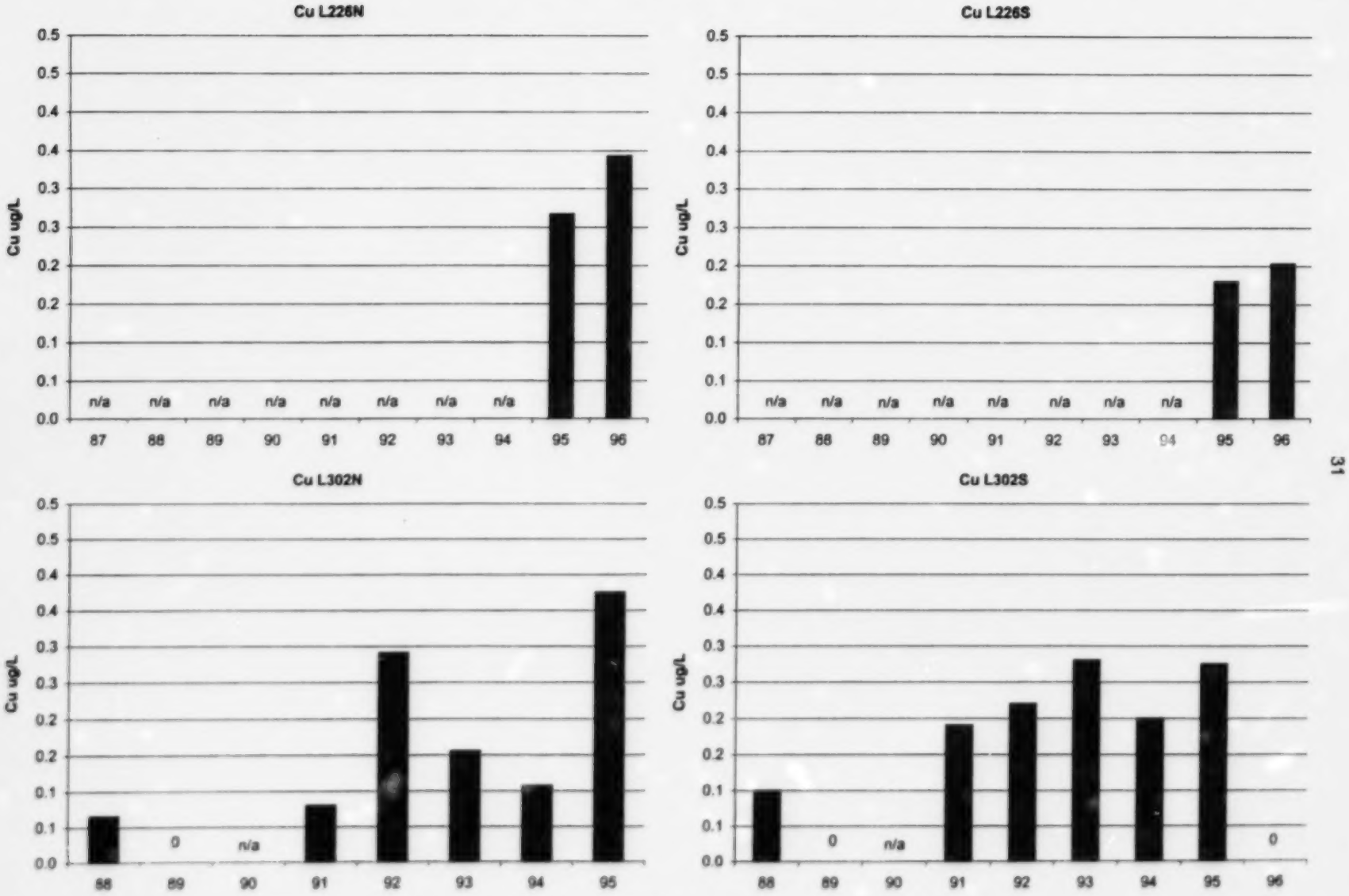



Fig. 2.3. Open water mean concentrations of Cu at 1 m depth in L226N, 226S, 302N, 302S.

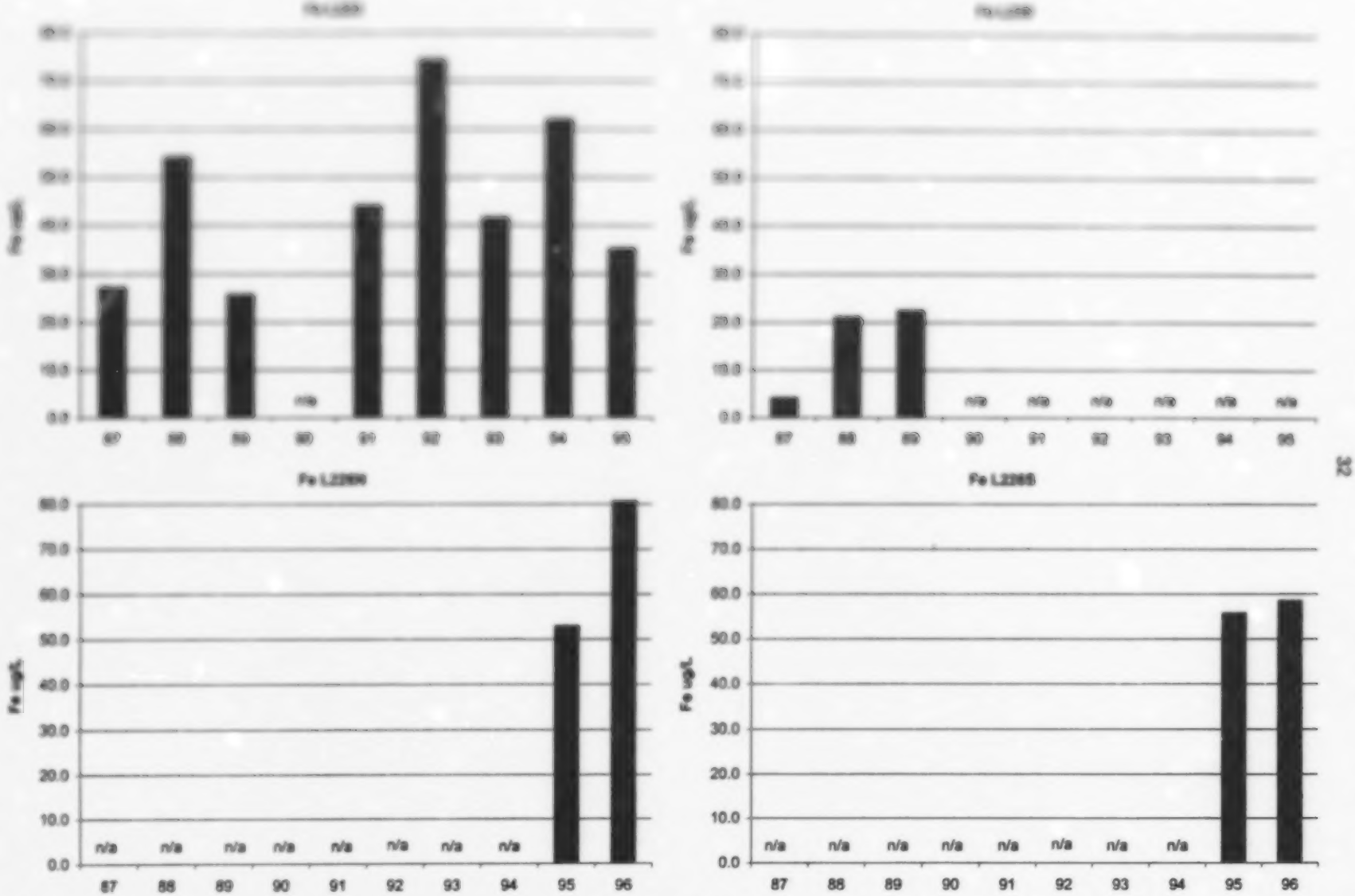



Fig. 2.4. Open water mean concentrations of Fe at 1 m depth in L223, 239, 226N, 226S.

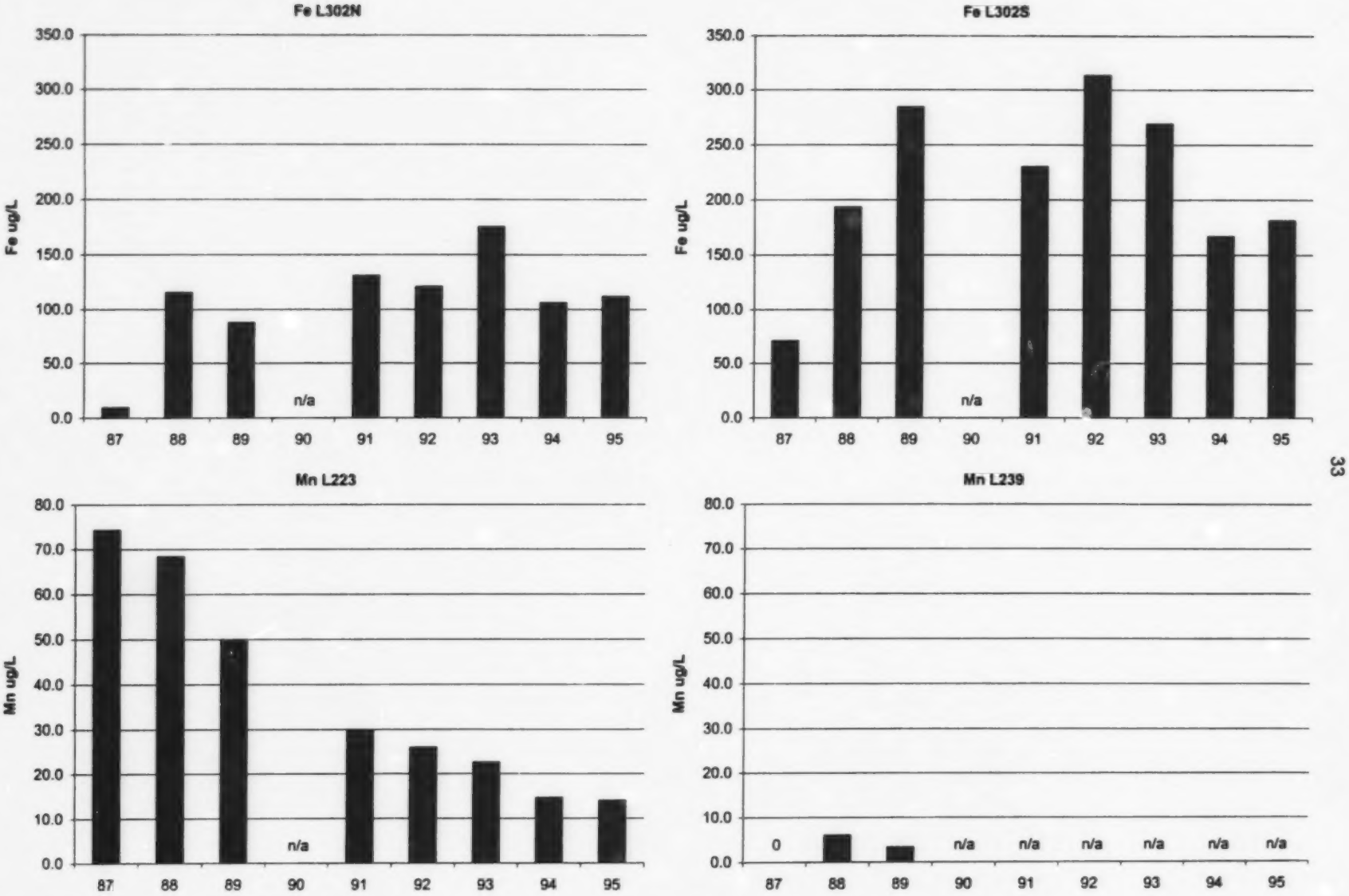
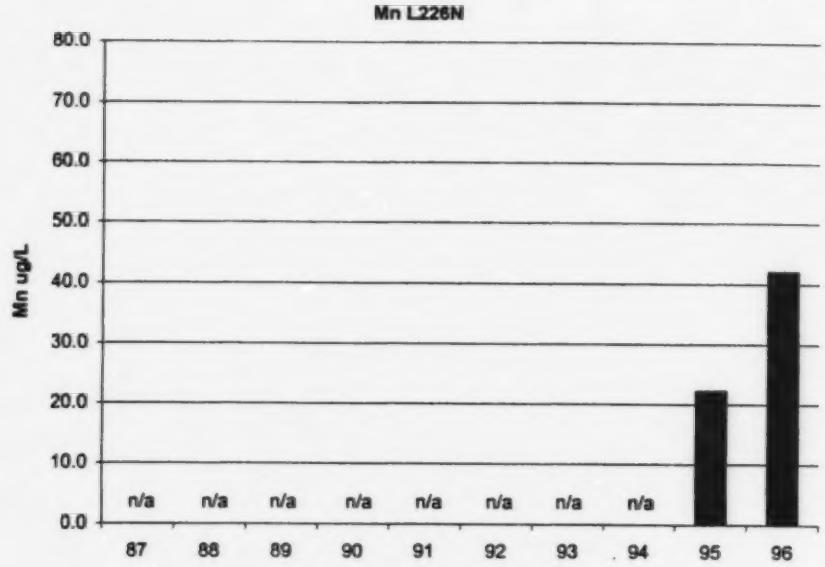
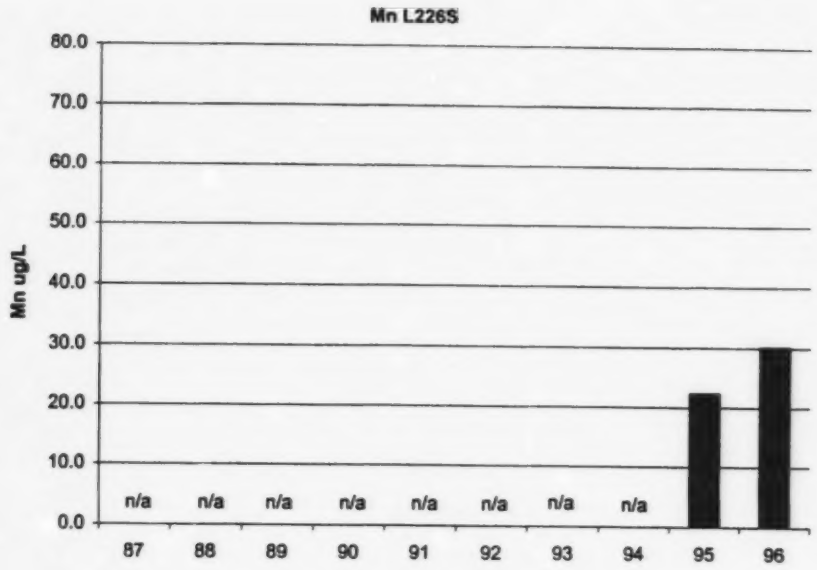
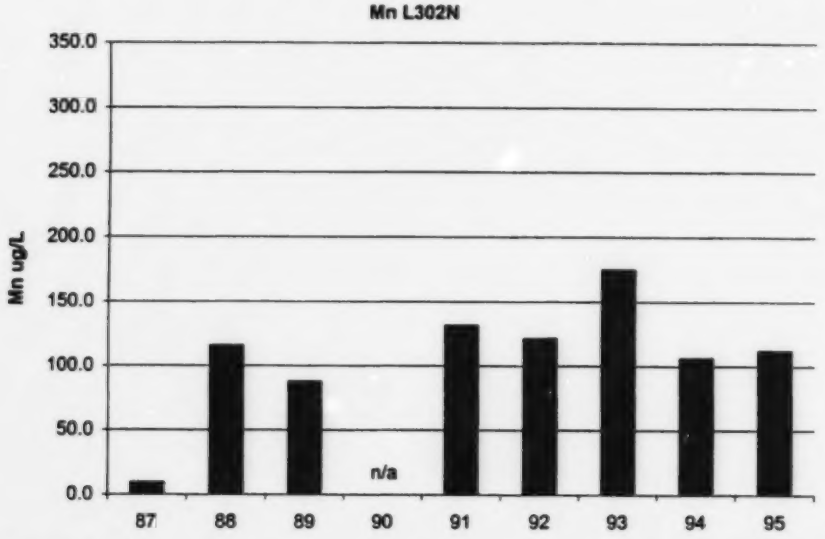



Fig. 2.5. Open water mean concentrations at 1 m depth of Fe in L302N, 302S, and of Mn in L223, 239.



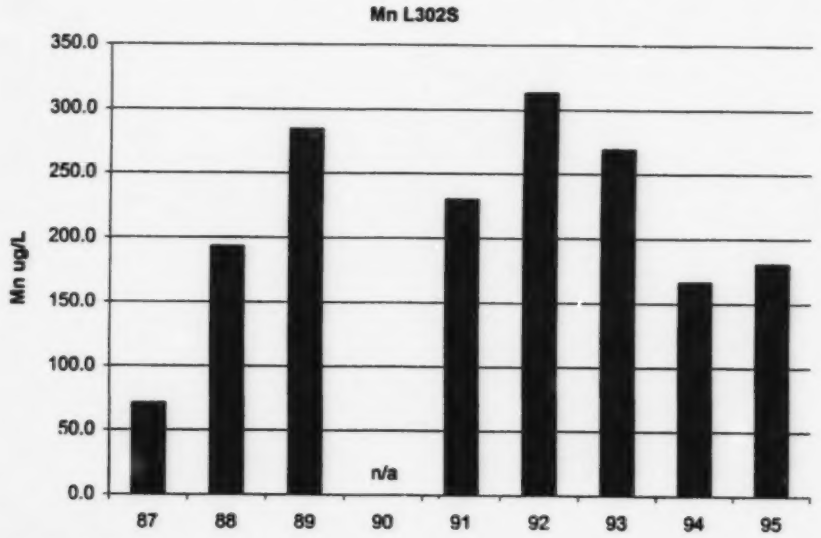




Fig. 2.6. Open water mean concentrations of Mn at 1 m depth in L226N, 226S, 302N, 302S.

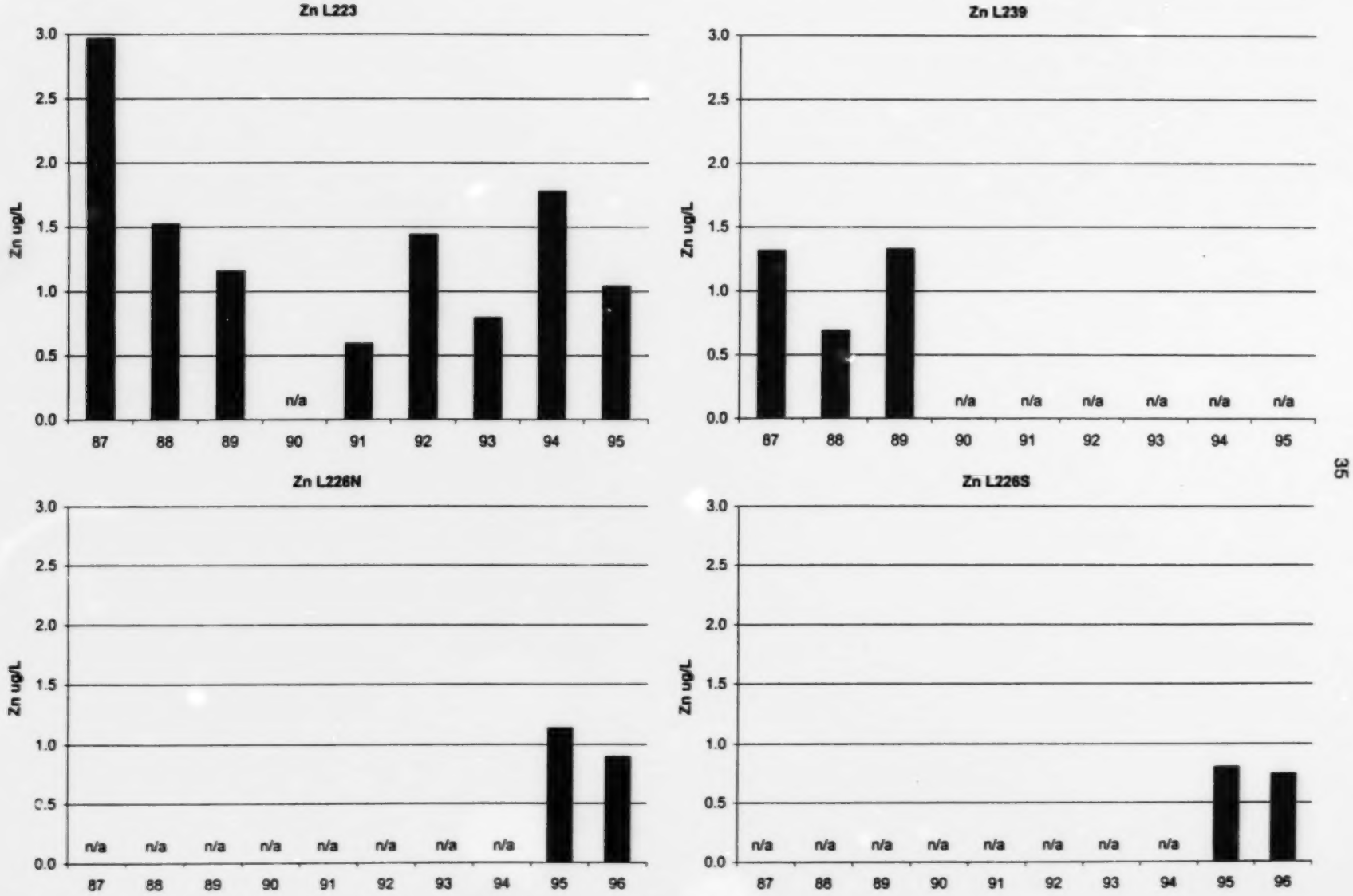
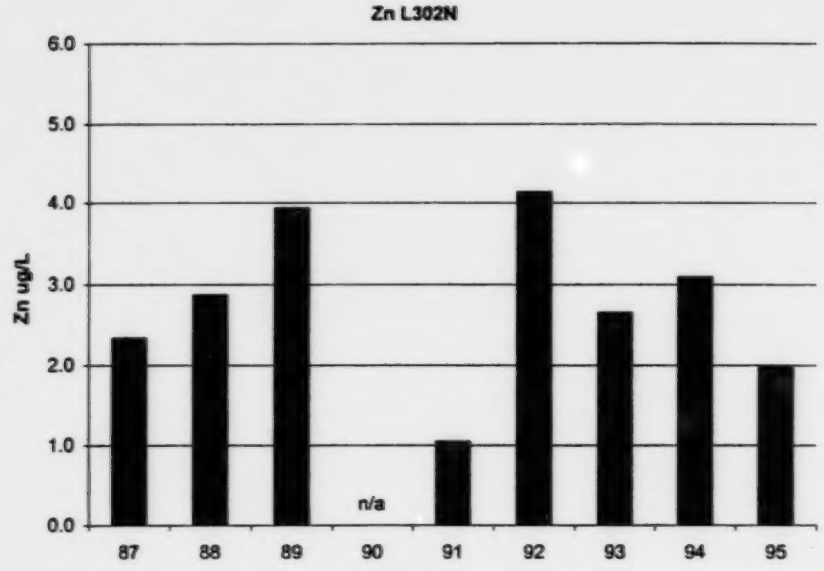
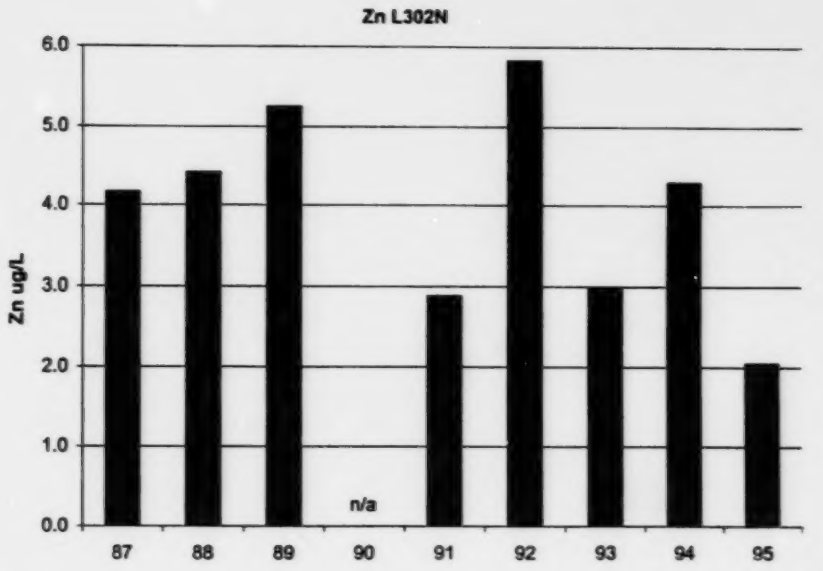
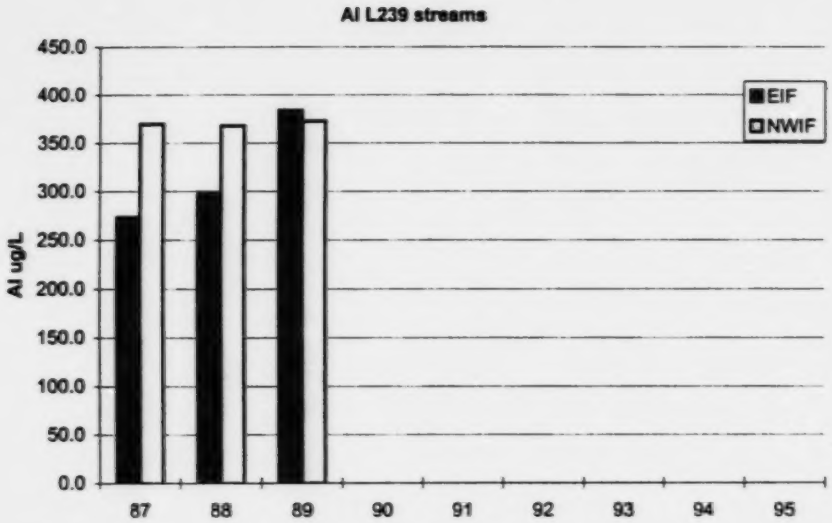



Fig. 2.7. Open water mean concentrations of Zn at 1 m depth in L223, 239, 226N, 226S.



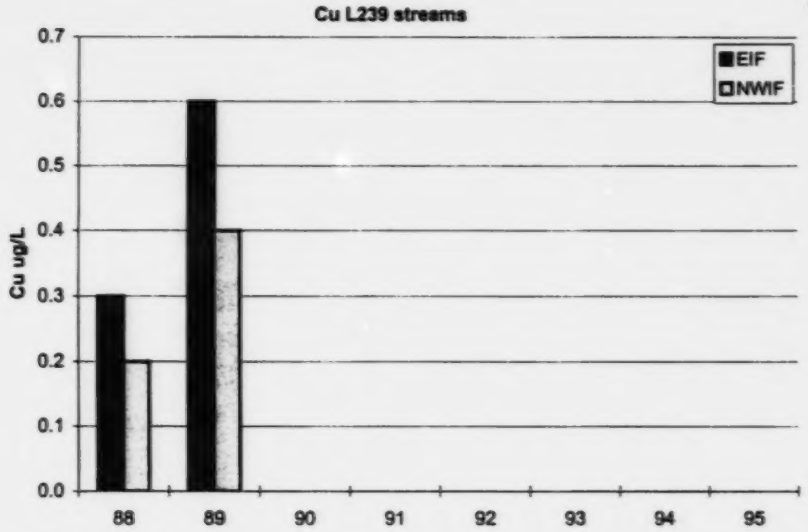
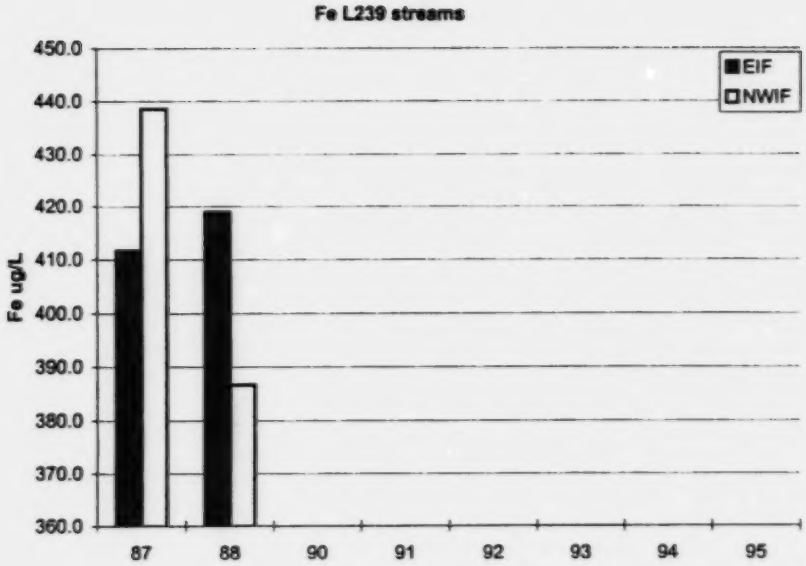
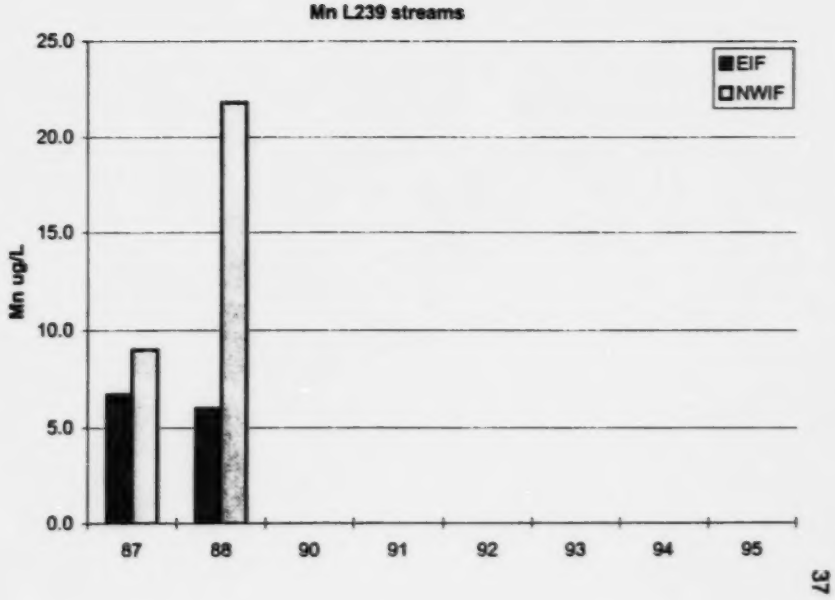




Fig. 2.8. Open water mean concentrations of Zn in L302N, 302S at 1 m depth, and of Al, Cu in L239 streams.



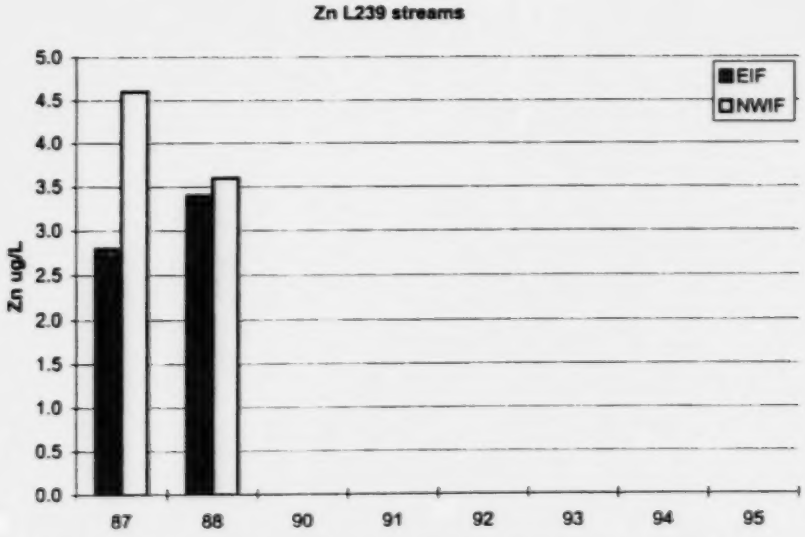




Fig. 2.9. Open water mean concentrations of Fe, Mn, Zn in L239 streams.

Summary of Appendices

Trace Metal depth profiles (raw data) for lakes and streams at the ELA.

| | |
|---|---|
| A1 - A7 | 1987 |
| B1 - B7 | 1988 |
| C1 - C6 | 1989 |
| D1 - D4 | 1990 |
| E1 - E3 | 1991 |
| F1 - F3 | 1992 |
| G1 - G3 | 1993 |
| H1 - H3 | 1994 |
| I1 - I5 | 1995 |
| J1 - J5 | 1996 |



Values more than two standard deviations from the calculated mean are marked with an asterisk (*).

| | |
|---|---|
| IF | Inflow |
| EIF | East inflow of lake 239 |
| NE@LA | Northeast inflow of lake 239, directly on lake shore. |
| NEIF | Northeast inflow of lake 239, on northeast weir. |
| NWIF | Northwest inflow of lake 239 |
| OF | Outflow |

Appendix A1.1 Concentrations of Al in L223 for 1987

| Depth | 12/9/86 | 1/20/87 | 2/17/87 | 3/17/87 | 5/16/87 | 6/1/87 | 6/15/87 | 6/29/87 | 7/13/87 | 7/27/87 | 8/10/87 | 8/24/87 | 9/23/87 | 9/7/87 | 10/26/87 | 10/5/87 | 12/15/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9.7 | 9.5 | 8.2 | 8.3 | 11 | | 15* | 12 | 7.4 | 5.5 | 7.1 | 7.7 | 12 | 7 | 6.5 | 11 | 6.5 |
| 4 | 17.4* | 9.8 | 8 | 8.3 | 10 | | | 12 | | 4.9 | | 6.9 | 6.6 | | 5.8 | | 7.7 |
| 8 | 10 | 12 | 11 | 9.8 | 14 | | | 9.4 | | 3 | | 5.9 | 7.9 | | 6.5 | | 8.6 |
| 10 | 9 | 9.4 | 12 | 9.2 | 14 | | | 13 | | | | 17* | 12 | | 7.9 | | 9 |
| 12 | 16.8 | 25 | 25 | 20 | 15 | | | 4 | | 3.9 | | 35 | 20 | | 7.7 | | 12 |
| 14 | 52 | 32 | 62 | 71 | 13 | | | 12 | | | | 57 | 40 | | 7 | | 7 |
| IF | | | | | 19 | 20 | 14 | 17 | 31* | | 20 | 19 | 12 | 21 | | | |

Appendix A1.2 Concentrations of Fe in L223 for 1987

| Depth | 12/9/86 | 1/20/87 | 2/17/87 | 3/17/87 | 5/16/87 | 6/1/87 | 6/15/87 | 6/29/87 | 7/13/87 | 7/27/87 | 8/10/87 | 8/24/87 | 9/23/87 | 9/7/87 | 10/26/87 | 10/5/87 | 12/15/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 7 | 8 | 10 | 10 | | 14 | 170* | 6 | 0 | 0 | 14 | 20 | 16 | 22 | 40 | 10 |
| 4 | 34 | 8 | 0 | 6 | 12 | | | 82* | | 0 | | 11 | 15 | | 29 | | 8 |
| 8 | 28 | 16 | 29 | 23 | 25 | | | 38 | | 6 | | 6 | 18 | | 20 | | 6 |
| 10 | 56 | 66 | 54 | 110 | 31 | | | 120 | | | | 2720* | 100 | | 20 | | 13 |
| 12 | 340 | 4420 | 4020 | 6110 | 90 | | | 1000* | | 600 | | 7760 | 9000 | | 17 | | 21 |
| 14 | 9980 | 10900 | 22300 | 22900 | 140 | | | 3580 | | | | 10000 | 14900 | | 20 | | 5480 |
| IF | | | | | 100 | 62 | 67 | 200 | 310 | | 58 | 210 | 580* | 300 | | | |

Appendix A1.3 Concentrations of Mn in L223 for 1987

| Depth | 12/9/86 | 1/20/87 | 2/17/87 | 3/17/87 | 5/16/87 | 6/1/87 | 6/15/87 | 6/29/87 | 7/13/87 | 7/27/87 | 8/10/87 | 8/24/87 | 9/23/87 | 9/7/87 | 10/26/87 | 10/5/87 | 12/15/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 87 | 100 | 83 | 96 | 68 | | 61 | 160* | 83 | 75 | 73 | 72 | 85 | 72 | 73 | 80 | 74 |
| 4 | 162* | 88 | 76 | 89 | 85 | | | 83 | | 87 | | 71 | 84 | | 73 | | 72 |
| 8 | 77 | 78 | 87 | 91 | 87 | | | 79 | | 88 | | 75 | 81 | | 71 | | 74 |
| 10 | 85 | 100 | 91 | 110 | 87 | | | 120 | | | | 210* | 90 | | 74 | | 82 |
| 12 | 220 | 180 | 120 | 160 | 93 | | | 200 | | 170 | | 200 | 220 | | 68 | | 92 |
| 14 | 400 | 250 | 410 | 420 | 100 | | | 180 | | | | 210 | 250 | | 76 | | 150 |
| IF | | | | | 5.4 | 6.4 | 9.2 | 14 | 26 | | 7.9 | 27 | 64* | 58 | | | |

Appendix A1.4 Concentrations of Zn in L223 for 1987

| Depth | 12/9/86 | 1/20/87 | 2/17/87 | 3/17/87 | 5/16/87 | 6/1/87 | 6/15/87 | 6/29/87 | 7/13/87 | 7/27/87 | 8/10/87 | 8/24/87 | 9/23/87 | 9/7/87 | 10/26/87 | 10/5/87 | 12/15/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.7 | 3.3 | 1.5 | 1.9 | 4 | | 3 | 4 | 1.8 | 4.3 | 2 | 2 | 3.7 | 3.1 | 1.7 | 5.8* | 3.1 |
| 4 | 5.6* | 2.2 | 3.3 | 1.4 | 2.5 | | | 3 | | 2.8 | | 2.3 | 2.4 | | 1.5 | | 2.2 |
| 8 | 2.8 | 2.5 | 2.3 | 1.8 | 2.3 | | | 1.5 | | 2.2 | | 2.3 | 2.1 | | 1.8 | | 1.7 |
| 10 | 2.8 | 3.1 | 3.5 | 2.5 | 3.2 | | | 4.8* | | | | 1.4 | 1.8 | | 1.8 | | 2.1 |
| 12 | 4.2* | 1.6 | 1.3 | 2.4 | 2 | | | 1.8 | | 3.3 | | 1 | 1.5 | | 2 | | 2.2 |
| 14 | 5.6* | 0.7 | 0.5 | 0.7 | 2.3 | | | 1.2 | | | | 1.1 | 0.8 | | 2.1 | | 3 |
| IF | | | | | 4.4 | 1.4 | 1.4 | 2.8 | 3.8 | | 22* | 1.5 | 9.5 | 5.5 | | | |

Appendix A2.1 Concentrations of Al in L225 for 1987

| Depth | 1/16/87 | 2/16/87 | 3/16/87 | 5/4/87 | 6/15/87 | 6/29/87 | 8/6/87 | 7/13/87 | 7/27/87 | 8/10/87 | 8/24/87 | 9/23/87 | 9/7/87 | 10/26/87 | 10/5/87 | 12/14/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 160 | 160 | 190 | 150 | 150 | 150 | 160 | 130 | 110 | 82 | 100 | 100 | 98 | 92 | 92 | 100 |

Appendix A2.2 Concentrations of Fe in L225 for 1987

| Depth | 1/16/87 | 2/16/87 | 3/16/87 | 5/4/87 | 6/15/87 | 6/29/87 | 8/6/87 | 7/13/87 | 7/27/87 | 8/10/87 | 8/24/87 | 9/23/87 | 9/7/87 | 10/26/87 | 10/5/87 | 12/14/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 46 | 93 | 150* | 50 | 52 | 76 | 50 | 51 | 51 | 42 | 33 | 29 | 31 | 19 | 23 | 20 |

Appendix A2.3 Concentrations of Mn in L225 for 1987

| Depth | 1/16/87 | 2/16/87 | 3/16/87 | 5/4/87 | 6/15/87 | 6/29/87 | 8/6/87 | 7/13/87 | 7/27/87 | 8/10/87 | 8/24/87 | 9/23/87 | 9/7/87 | 10/26/87 | 10/5/87 | 12/14/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 24 | 22 | 34 | 16 | 18 | 18 | 17 | 19 | 18 | 22 | 22 | 28 | 26 | 30 | 28 | 37* |

Appendix A2.4 Concentrations of Zn in L225 for 1987

| Depth | 1/16/87 | 2/16/87 | 3/16/87 | 5/4/87 | 6/15/87 | 6/29/87 | 8/6/87 | 7/13/87 | 7/27/87 | 8/10/87 | 8/24/87 | 9/23/87 | 9/7/87 | 10/26/87 | 10/5/87 | 12/14/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11 | 8.7 | 9.2 | 3.5 | 5.3 | 4.2 | 7.5 | 4.8 | 7.8 | 5.1 | 3.2 | 5.4 | 6.2 | 3.5 | 6.8 | 7.8 |

Appendix A3.1 Concentrations of Al in L239 for 1987

| Depth | 12/9/86 | 1/16/87 | 2/16/87 | 3/16/87 | 5/4/87 | 7/13/87 | 7/2/87 | 8/10/87 | 8/27/87 | 9/21/87 | 9/7/87 | 10/26/87 | 12/14/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 35 | 32 | 38 | 25 | 35 | 31 | 34 | 20 | 25 | 22 | 19 | 15 | 12 |
| 5 | 39 | 27 | 33 | 28 | | 28 | | | | | 23 | | 9.5 |
| 10 | 74* | 34 | | 28 | | 36 | | | | | 26 | | 11 |
| 15 | 74 | 33 | 34 | 29 | | 41 | | | | | 37 | | 12 |
| 20 | 80* | 37 | 41 | 33 | | 40 | | | | | 58 | | 13 |
| 25 | 80* | 39 | 43 | 40 | | 42 | | | | | 42 | | 16 |
| 30 | 98* | 45 | 53 | 61 | | 58 | | | | | 47 | | 21 |

Appendix A3.2 Concentrations of Fe in L239 for 1987

| Depth | 12/9/86 | 1/16/87 | 2/16/87 | 3/16/87 | 5/4/87 | 7/13/87 | 7/2/87 | 8/15/87 | 8/27/87 | 9/21/87 | 9/7/87 | 10/26/87 | 12/14/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14 | 12 | 13 | 11 | 10 | 5 | 0 | 0 | 0 | 7 | 0 | 11 | 5 |
| 5 | 15 | 11 | 8 | 14 | | 0 | | | | | 0 | | 0 |
| 10 | 30* | 11 | | 12 | | 11 | | | | | 13 | | 8 |
| 15 | 54* | 20 | 29 | 18 | | 10 | | | | | 6 | | 6 |
| 20 | 54 | 36 | 80 | 23 | | 15 | | | | | 22 | | 10 |
| 25 | 66 | 58 | 67 | 76 | | 42 | | | | | 70 | | 14* |
| 30 | 124 | 58 | 150 | 190 | | 74 | | | | | 120 | | 40 |

Appendix A3.3 Concentrations of Mn in L239 for 1987

| Depth | 12/8/86 | 1/19/87 | 2/16/87 | 3/16/87 | 6/4/87 | 7/13/87 | 7/28/87 | 8/10/87 | 8/27/87 | 9/21/87 | 9/7/87 | 10/25/87 | 12/14/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.6 | 2.6 | 3.3 | 2.5 | 0 | 0 | 0 | 0 | 0 | 3.4 | 0 | 9.1* | 0 |
| 5 | 2.7 | 4 | 4.1 | 3.8 | | 0 | | | | | 0 | | 0 |
| 10 | 8 | 3.7 | | 4.1 | | 0 | | | | | 35* | | 0 |
| 15 | | 4 | 4.9 | 3.5 | | 0 | | | | | 1.1 | | 0 |
| 20 | 12 | 4.4 | 8.2 | 5.1 | | 0.7 | | | | | 2.4 | | 0 |
| 25 | 11.8 | 8.4 | 9.4 | 8.2 | | 3.4 | | | | | 18 | | 0 |
| 30 | 17 | 14 | 16 | 22 | | 12 | | | | | 70* | | 0 |

Appendix A3.4 Concentrations of Zn in L239 for 1987

| Depth | 12/8/86 | 1/19/87 | 2/16/87 | 3/16/87 | 6/4/87 | 7/13/87 | 7/28/87 | 8/10/87 | 8/27/87 | 9/21/87 | 9/7/87 | 10/25/87 | 12/14/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.8 | 1.5 | 1.3 | 1.4 | 0.9 | 3 | 0.7 | 1.3 | 0.8 | 1.7 | 1.3 | 0.8 | 1.6 |
| 5 | 1.5 | 1.4 | 1.1 | 0.7 | | 1.1 | | | | | 1.3 | | 0.8 |
| 10 | 5 | 0.9 | | 1.6 | | 1.1 | | | | | 1.2 | | 0.7 |
| 15 | 8.4 | 1.2 | 0.9 | 1 | | 2.6 | | | | | 1.2 | | 1.3 |
| 20 | 4.4 | 0.9 | 0.9 | 3.1 | | 1.4 | | | | | 1.1 | | 1.2 |
| 25 | 2 | 1.6 | 1.2 | 2.5 | | 1.9 | | | | | 0.9 | | 1.6 |
| 30 | 3.4 | 2.1 | 1.4 | 1.6 | | 2.1 | | | | | 1.2 | | 0.7 |

Appendix A4.1 Concentrations of Al in L239 streams for 1987

| Depth | 5/13/87 | 5/26/87 | 5/7/87 | 6/11/87 | 6/15/87 | 6/24/87 | 8/4/87 | 7/15/87 | 7/28/87 | 7/8/87 | 8/13/87 | 8/18/87 | 10/15/87 | 10/25/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EIF | 180 | 330 | 160 | 480 | | | 310 | | | | 200 | | | |
| NE@LA | | | | 500 | 750 | | 620 | | | | 660 | 680 | | |
| NEIF | | 310 | | 380 | 340 | | 360 | | | | 490 | 560 | 580 | 610 |
| NWF | | 350 | 280 | 460 | 440 | | 390 | | | | 340 | 330 | | |
| OF | 46 | 32 | 43 | 38 | 29 | 30 | 34 | 30 | 49 | 28 | 31 | | | |

Appendix A4.2 Concentrations of Fe in L239 streams for 1987

| Depth | 5/13/87 | 5/26/87 | 5/7/87 | 6/11/87 | 6/15/87 | 6/24/87 | 8/4/87 | 7/15/87 | 7/28/87 | 7/8/87 | 8/13/87 | 8/18/87 | 10/15/87 | 10/25/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EIF | 280 | 410 | 290 | 820 | | | 500 | | | | 390 | | | |
| NE@LA | | | | 970 | 830 | | 830 | | | | 1060 | 1030 | | |
| NEIF | | 560 | | 720 | 710 | | 660 | | | | 730 | 950 | 710 | 840 |
| NWF | | 330 | 310 | 520 | 520 | | 410 | | | | 470 | 510 | | |
| OF | 13 | 7 | 14 | 5 | 8 | 5 | 12 | 0 | 10 | 6 | 0 | | | |

Appendix A4.3 Concentrations of Mn in L239 streams for 1987

| Depth | 5/13/87 | 5/26/87 | 5/7/87 | 6/11/87 | 6/15/87 | 6/24/87 | 8/4/87 | 7/15/87 | 7/28/87 | 7/8/87 | 8/13/87 | 8/18/87 | 10/15/87 | 10/25/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EIF | 8.9 | 2.8 | 6.2 | 9.8 | | | 7.3 | | | | 5.3 | | | |
| NE@LA | | | | 35 | 50 | | 38 | | | | 64 | 57 | | |
| NEIF | | 21 | | 24 | 24 | | 23 | | | | 50 | 45 | 56 | 56 |
| NWF | | 8.7 | 8.1 | 9.4 | 10 | | 7.7 | | | | 19* | 12 | | |
| OF | 1.2 | 0.7 | 1.5* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |

Appendix A4.4 Concentrations of Zn in L239 streams for 1987

| Depth | 5/13/87 | 5/26/87 | 5/7/87 | 6/11/87 | 6/15/87 | 6/24/87 | 8/4/87 | 7/15/87 | 7/28/87 | 7/8/87 | 8/13/87 | 8/18/87 | 10/15/87 | 10/25/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EIF | 1.4 | 1.7 | 5.3 | 1.8 | | | 2 | | | | 4.3 | | | |
| NE@LA | | | | 5.4 | 5.6 | | 5.4 | | | | 9.4 | 5.5 | | |
| NEIF | | 4.4 | | 5.8 | 8.6 | | 5.7 | | | | 8.2 | 7.2 | 10 | 17* |
| NWF | | 1.5 | 2.3 | 2.1 | 3 | | 2.4 | | | | 11 | 10 | | |
| OF | 0.9 | 0.5 | 0.8 | 1.1 | 0.8 | 0.5 | 0.7 | 1.2 | 0.4 | 1 | 4.7* | | | |

Appendix A5.1 Concentrations of Al in L302N for 1987

| Depth | 1/20/87 | 2/17/87 | 3/17/87 | 5/19/87 | 6/16/87 | 6/2/87 | 6/30/87 | 7/14/87 | 7/28/87 | 8/11/87 | 8/25/87 | 9/22/87 | 9/8/87 | 10/25/87 | 10/6/87 | 12/15/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 12 | 11 | 10 | 8.4 | 18* | 10 | 17 | 10 | 10 | 11 | 18 | 9.1 | 11 | 8.9 | 9.4 | 9.3 |
| 4 | 13 | 12 | 7.8 | 9.1 | | 8.5 | 12 | | 13 | | 14 | 11 | | 8.1 | | 12 |
| 6 | 12 | 12 | 7.3 | 8.9 | | 11 | 8.6 | | 3.9* | | 12 | 9.4 | | 7.8 | | 11 |
| 9 | 13 | 13 | 12 | 15 | | 10 | | | 8.5 | | 14 | 16 | | 8.4 | | 9.7 |
| 11 | 18 | 20 | 20 | 16 | | 11 | 37 | | 26 | | 44 | 36 | | 8.2 | | 10 |
| 13 | 34 | 60 | 90* | 28 | | 11 | 30 | | 31 | | 42 | 45 | | 9.7 | | 11 |

Appendix A5.2 Concentrations of Fe in L302N for 1987

| Depth | 1/20/87 | 2/17/87 | 3/17/87 | 5/19/87 | 6/16/87 | 6/2/87 | 6/30/87 | 7/14/87 | 7/28/87 | 8/11/87 | 8/25/87 | 9/22/87 | 9/8/87 | 10/25/87 | 10/6/87 | 12/15/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 16 | 43* | 5 | 6 | 0 | 9 | 0 | 10 | 0 | 16 | 20 | 9 | 14 | 19 | 17 |
| 4 | 21 | 15 | 20 | 6 | | 0* | 18 | | 8 | | 8 | 14 | | 16 | | 16 |
| 6 | 19 | 16 | 14 | 9 | | 9 | 13 | | 0* | | 7 | 25 | | 17 | | 15 |
| 9 | 75 | 50 | 150 | 46 | | 45 | | | 480 | | 41 | 1100* | | 13 | | 38 |
| 11 | 980 | 1220 | 1120 | 240 | | 85 | 2170 | | 2230 | | 3360 | 4560 | | 15 | | 72 |
| 13 | 5860 | 7660 | 7840 | 1310 | | 86 | 2130 | | 2420 | | 3570 | 4580 | | 21 | | 1140 |

Appendix A6.3 Concentrations of Mn in L302N for 1987

| Depth | 1/20/87 | 2/17/87 | 3/17/87 | 5/19/87 | 6/16/87 | 6/2/87 | 6/30/87 | 7/14/87 | 7/28/87 | 8/11/87 | 8/25/87 | 9/22/87 | 9/8/87 | 10/25/87 | 10/6/87 | 12/15/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 63 | 58 | 75 | 30 | 29 | 0 | 36 | 47 | 58 | 62 | 58 | 70 | 57 | 130* | 110 | 120 |
| 4 | 54 | 48 | 58 | 30 | | 0 | 14 | | 54 | | 58 | 66 | | 130 | | 130 |
| 6 | 52 | 50 | 57 | 34 | | 15 | 13 | | 2.9 | | 55 | 73 | | 130 | | 120 |
| 9 | 88 | 110 | 140 | 130 | | 200 | | | 500 | | 560 | 720* | | 130 | | 150 |
| 11 | 310 | 250 | 230 | 250 | | 190 | 380 | | 460 | | 530 | 590 | | 130 | | 190 |
| 13 | 760 | 880 | 570 | 280 | | 310 | 370 | | 430 | | 510 | 570 | | 130 | | 280 |

Appendix A6.4 Concentrations of Zn in L302N for 1987

| Depth | 1/20/87 | 2/17/87 | 3/17/87 | 5/19/87 | 6/16/87 | 6/2/87 | 6/30/87 | 7/14/87 | 7/28/87 | 8/11/87 | 8/25/87 | 9/22/87 | 9/8/87 | 10/25/87 | 10/6/87 | 12/15/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.8 | 2.3 | 1.6 | 1.8 | 2.7 | 1.3 | 1.8 | 1 | 1.8 | 3.5 | 1.8 | 44* | 3.8 | 4.2 | 1.9 | 1.8 |
| 4 | 2.4 | 1.8 | 1.3 | 2.5 | | 1.2 | 2 | | 2.8 | | 1 | 8.2* | | 3.1 | | 1.4 |
| 6 | 1.1 | 1.4 | 1.4 | 2.2 | | 1.4 | 2 | | 1.3 | | 0.9 | 6.7* | | 2.7 | | 1.4 |
| 9 | 2.1 | 1.5 | 1.6 | 1.3 | | 1.6 | | | 2.2 | | 1.7 | 1.6 | | 1.6 | | 1.8 |
| 11 | 2 | 1.1 | 2.8* | 1.5 | | 1.4 | 1.7 | | 1.6 | | 1 | 2.5 | | 1.9 | | 1.8 |
| 13 | 1.2 | 1.8 | 0.7 | 1.7 | | 1.4 | 3.1 | | 1.8 | | 0.7 | 1.5 | | 4.5* | | 1.7 |

Appendix A6.1 Concentrations of Al in L302S for 1987

| Depth | 1/20/87 | 2/17/87 | 3/17/87 | 5/19/87 | 6/16/87 | 6/2/87 | 6/30/87 | 7/14/87 | 7/28/87 | 8/11/87 | 8/25/87 | 9/22/87 | 9/8/87 | 10/25/87 | 10/6/87 | 12/15/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 29 | 26 | 28 | 23 | 36* | 27 | 26 | 25 | 25 | 21 | 30 | 28 | 24 | 24 | 30 | 35 |
| 4 | 26 | 26 | 18* | 24 | | 30 | 28 | | 26 | | 26 | 25 | | 25 | | 32 |
| 6 | 22 | 22 | 17 | 20 | | 26 | 30 | | 21 | | 29 | 27 | | 24 | | 31 |
| 8 | 23 | 18 | 15 | 10 | | 26 | 12 | | 20 | | 28 | 32 | | 23 | | 37 |
| 10 | 30 | 33 | 38 | 12 | | 14 | 26 | | 32 | | 46 | 30 | | 23 | | 28 |

Appendix A6.2 Concentrations of Fe in L302S for 1987

| Depth | 1/20/87 | 2/17/87 | 3/17/87 | 5/19/87 | 6/16/87 | 6/2/87 | 6/30/87 | 7/14/87 | 7/28/87 | 8/11/87 | 8/25/87 | 9/22/87 | 9/8/87 | 10/25/87 | 10/6/87 | 12/15/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 38 | 38 | 28 | 28 | 23 | 29 | 41 | 86 | 130 | 120 | 110 | 170* | 41 | 110 | 60 | 100 |
| 4 | 28 | 36 | 66 | 22 | | 28 | 35 | | 71 | | 120 | 80 | | 100 | | 110 |
| 6 | 62 | 66 | 76 | 26 | | 23 | 36 | | 130 | | 130 | 120 | | 82 | | 110 |
| 8 | 110 | 130 | 97 | 42 | | 37 | 87 | | 380* | | 130 | 78 | | 56 | | 80 |
| 10 | 2340 | 2660 | 3570 | 330 | | 110 | 3220 | | 4570 | | 8040 | 200 | | 44 | | 140 |

Appendix A6.3 Concentrations of Mn in L302S for 1987

| Depth | 1/20/87 | 2/17/87 | 3/17/87 | 5/19/87 | 6/16/87 | 6/1/87 | 6/30/87 | 7/14/87 | 7/28/87 | 8/11/87 | 8/25/87 | 9/22/87 | 9/8/87 | 10/25/87 | 10/6/87 | 12/15/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 170 | 180 | 190 | 160 | 170 | 160 | 190 | 190 | 200 | 190 | 190 | 210 | 190 | 200 | 200 | 190 |
| 4 | 180 | 160* | 180 | 160* | | 160* | 190 | | 200 | | 190 | 200 | | 190 | | 200 |
| 6 | 180 | 170 | 180 | 160 | | 160 | 180 | | 200 | | 190 | 190 | | 180 | | 190 |
| 8 | 190 | 170 | 180 | 110 | | 170 | 110 | | 190 | | 190 | 200 | | 190 | | 190 |
| 10 | 220 | 220 | 230 | 210 | | 200 | 310 | | 340 | | 350 | 200 | | 200 | | 190 |

Appendix A6.4 Concentrations of Zn in L302S for 1987

| Depth | 1/20/87 | 2/17/87 | 3/17/87 | 5/19/87 | 6/16/87 | 6/2/87 | 6/30/87 | 7/14/87 | 7/28/87 | 8/11/87 | 8/25/87 | 9/22/87 | 9/8/87 | 10/25/87 | 10/6/87 | 12/15/87 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.7 | 3.6 | 4.1 | 4.4 | 3.6 | 6 | 3.5 | 3.9 | 3.8 | 3.4 | 3.5 | 100* | 4 | 4.4 | 5.3 | 3.2 |
| 4 | 4.2 | 8.8* | 2.8 | 4.2 | | 3.3 | 3.7 | | 5.4 | | 2.7 | 4.8 | | 3.8 | | 3.9 |
| 6 | 2.9 | 3 | 3.2 | 4.7 | | 2.7 | 4.2 | | 3.2 | | 2.5 | 4.2 | | 4 | | 3.8 |
| 8 | 3.8 | 3.1 | 2.8 | 2.7 | | 3.7 | 7.8* | | 2.4 | | 2.4 | 3.8 | | 3.8 | | 3.9 |
| 10 | 1.8 | 1.7 | 1.4 | 5.1 | | 2.6 | 52* | | 1.8 | | 1.1 | 3.4 | | 3.5 | | 3.6 |

Appendix A7.1 Concentrations of Al in L382 for 1987

| Depth | 12/10/86 | 1/21/87 | 2/18/87 | 10/27/87 |
|---|---|---|---|---|
| 1 | 9.2 | 10 | 11 | 3.4 |

Appendix A7.2 Concentrations of Fe in L382 for 1987

| Depth | 12/10/86 | 1/21/87 | 2/18/87 | 10/27/87 |
|---|---|---|---|---|
| 1 | 15 | 9 | 17 | 0 |

Appendix A7.3 Concentrations of Mn in L382 for 1987

| Depth | 12/10/86 | 1/21/87 | 2/18/87 | 10/27/87 |
|---|---|---|---|---|
| 1 | 2.1 | 1.3 | 2.1 | 0 |

Appendix A7.4 Concentrations of Zn in L382 for 1987

| Depth | 12/10/86 | 1/21/87 | 2/18/87 | 10/27/87 |
|---|---|---|---|---|
| 1 | 1.9 | 2.4 | 5.4 | 0.8 |

Appendix B1.1 Concentrations of Al in L223 for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/22/88 | 5/16/88 | 5/23/88 | 5/30/88 | 6/6/88 | 6/13/88 | 6/20/88 | 6/27/88 | 8/6/88 | 7/11/88 | 7/18/88 | 7/25/88 | 7/4/88 | 8/1/88 | 8/15/88 | 8/22/88 | 8/29/88 | 9/6/88 | 9/12/88 | 9/19/88 | 9/26/88 | 9/5/88 | 10/10/88 | 10/20/88 | 10/25/88 | 10/3/88 | 12/6/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8 | 9 | 8 | 24* | 12 | 9 | 22* | 9 | 13 | 10 | | 25* | 16 | 15 | 9 | 13 | 7 | 9 | 12 | 12 | 11 | 7 | 12 | 9 | 15 | 12 | 13 | 15 | 8 |
| 4 | 8 | 9 | 9 | | | | 23* | | | | 11 | | | | 9 | 13 | | | 10 | | | | 11 | | | | 12 | | 7 |
| 8 | 31* | 16 | 11 | | | | 30* | | | | 15 | | | | 13 | 13 | | | 11 | | | | 12 | | | | 12 | | 9 |
| 10 | 13 | 14 | 11 | | | | 24 | | | | 19 | | | | 27 | 29 | | | 14 | | | | 17 | | | | 12 | | 14 |
| 12 | 10 | 39 | 15 | | | | 23 | | | | 51 | | | | 48 | 57 | | | 66 | | | | 41 | | | | 13 | | 37 |
| 14 | 84 | 63 | 63 | | | | 61 | | | | 82 | | | | 83 | 77 | | | 76 | | | | 61 | | | | 19 | | 100 |

Appendix B1.2 Concentrations of Cu in L223 for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/22/88 | 5/16/88 | 5/23/88 | 5/30/88 | 6/6/88 | 6/13/88 | 6/20/88 | 6/27/88 | 8/6/88 | 7/11/88 | 7/18/88 | 7/25/88 | 7/4/88 | 8/1/88 | 8/15/88 | 8/22/88 | 8/29/88 | 9/6/88 | 9/12/88 | 9/19/88 | 9/26/88 | 9/5/88 | 10/10/88 | 10/20/88 | 10/25/88 | 10/3/88 | 12/6/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0.2 | 0.5* | 0 | 0 | 0 | 0.2 | 0 | 0 | 0 | | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0.3* | 0 | 0 | 0 | 0 | 0.4* | 0 |
| 4 | 0 | 0 | 0.3* | | | | 0.2 | | | | 0 | | | | 0 | 0 | | | 0 | | | | 0 | | | | 0 | | 0 |
| 8 | 0.3 | 0 | 0.3 | | | | 0 | | | | 1.1* | | | | 0 | 0 | | | 0 | | | | 0 | | | | 0 | | 0.4 |
| 10 | 0 | 0 | 0.2 | | | | 0 | | | | 0 | | | | 0 | 0 | | | 0.2 | | | | 0 | | | | 0 | | 0 |
| 12 | 0 | 0.4 | 0.3 | | | | 0 | | | | 0 | | | | 0 | 0 | | | 0.3 | | | | 0 | | | | 0.2 | | 0 |
| 14 | 0.6 | 0.3 | 0.7 | | | | 0.3 | | | | 0.3 | | | | 0 | 0 | | | 0.3 | | | | 0.6 | | | | 0 | | 0.3 |

Appendix B1.3 Concentrations of Fe in L223 for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/22/88 | 5/16/88 | 5/23/88 | 5/30/88 | 6/6/88 | 6/13/88 | 6/20/88 | 6/27/88 | 8/6/88 | 7/11/88 | 7/18/88 | 7/25/88 | 7/4/88 | 8/1/88 | 8/15/88 | 8/22/88 | 8/29/88 | 9/6/88 | 9/12/88 | 9/19/88 | 9/26/88 | 9/5/88 | 10/10/88 | 10/20/88 | 10/25/88 | 10/3/88 | 12/6/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 43 | 49 | 20 | 66 | 45 | 19 | 64 | 21 | 29 | 0 | | 44 | 44 | 34 | 38 | 40 | 44 | 54 | 68 | 47 | 130 | 130 | 180* | 110 | 210* | 150 | 150 | 240* | 83 |
| 4 | 41 | 25 | 38 | | | | 140 | | | | 20 | | | | 0 | 41 | | | 86 | | | | 170 | | | | 140 | | 88 |
| 8 | 1780* | 75 | 100 | | | | 230* | | | | 55 | | | | 150 | 140 | | | 84 | | | | 160 | | | | 130 | | 85 |
| 10 | 120 | 100 | 100 | | | | 180 | | | | 280 | | | | 790 | 870* | | | 410 | | | | 270 | | | | 140 | | 130 |
| 12 | 71 | 3470 | 1640 | | | | 110 | | | | 1640 | | | | 3340 | 860 | | | 1170 | | | | 1520 | | | | 140 | | 540 |
| 14 | 16200* | 6900 | 17500* | | | | 650 | | | | 4200 | | | | 5690 | 870 | | | 1190 | | | | 1540 | | | | 180 | | 1280 |

Appendix B1.4 Concentrations of Mn in L223 for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/22/88 | 5/16/88 | 5/23/88 | 5/30/88 | 6/6/88 | 6/13/88 | 6/20/88 | 6/27/88 | 8/6/88 | 7/11/88 | 7/18/88 | 7/25/88 | 7/4/88 | 8/1/88 | 8/15/88 | 8/22/88 | 8/29/88 | 9/6/88 | 9/12/88 | 9/19/88 | 9/26/88 | 9/5/88 | 10/10/88 | 10/20/88 | 10/25/88 | 10/3/88 | 12/6/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 83 | 68 | 64 | 73 | 72 | 71 | 75 | 62 | 60 | 120* | | 110* | 69 | 65 | 70 | 33 | 20* | 69 | 71 | 25 | 71 | 69 | 68 | 65 | 71 | 68 | 81 | 68 | 61 |
| 4 | 83 | 65 | 78 | | | | 97 | | | | 64 | | | | 110 | 36 | | | 60 | | | | 68 | | | | 95 | | 52 |
| 8 | 130* | 87 | 62 | | | | 85 | | | | 71 | | | | 90 | 86 | | | 64 | | | | 74 | | | | 71 | | 61 |
| 10 | 99 | 88 | 89 | | | | 85 | | | | 63 | | | | 120 | 210 | | | 240* | | | | 77 | | | | 71 | | 68 |
| 12 | 84 | 140 | 120 | | | | 89 | | | | 120 | | | | 170 | 230 | | | 260 | | | | 180 | | | | 71 | | 89 |
| 14 | 260 | 200 | 260 | | | | 97 | | | | 140 | | | | 180 | 240 | | | 270 | | | | 370 | | | | 88 | | 140 |

Appendix B1.5 Concentrations of Zn in L223 for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/22/88 | 5/16/88 | 5/23/88 | 5/30/88 | 6/6/88 | 6/13/88 | 6/20/88 | 6/27/88 | 8/6/88 | 7/11/88 | 7/18/88 | 7/25/88 | 7/4/88 | 8/1/88 | 8/15/88 | 8/22/88 | 8/29/88 | 9/6/88 | 9/12/88 | 9/19/88 | 9/26/88 | 9/5/88 | 10/10/88 | 10/20/88 | 10/25/88 | 10/3/88 | 12/6/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.3 | 1.3 | 1.8 | 1.4 | 0.3 | 1.9 | 1.8 | 2.4 | 2.2 | 1.8 | | 1.5 | 2.4 | 1.8 | 0.7 | 1 | 1 | 0.9 | 0.9 | 1.9 | 1.8 | 1.5 | 0.9 | 0.9 | 1.6 | 2.1 | 11* | 1.7 | 1.1 |
| 4 | 1.1 | 1 | 1.3 | | | | 2 | | | | 4.8* | | | | 0.5 | 1 | | | 1 | | | | 0.8 | | | | 1.5 | | 0.8 |
| 8 | 1.3 | 1.8 | 1.5 | | | | 2 | | | | 5.6* | | | | 0.7 | 1 | | | 1.2 | | | | 1.1 | | | | 1.3 | | 0.7 |
| 10 | 1.5 | 1.7 | 1.4 | | | | 1.7 | | | | 2 | | | | 0.8 | 1.2 | | | 0.8 | | | | 0.9 | | | | 1 | | 0.9 |
| 12 | 1.7 | 1.2 | 1 | | | | 1.9 | | | | 2.2 | | | | 0.4 | 1.1 | | | 2 | | | | 1.1 | | | | 1 | | 1.4 |
| 14 | 1.1 | 1.2 | 0.3 | | | | 2.8 | | | | 2 | | | | 3 | 0.7 | | | 2.1 | | | | 1.3 | | | | 1 | | 1.2 |

Appendix B2.1 Concentrations of Al in L225 for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/21/88 |
|---|---|---|---|
| 1 | 110 | 120 | 100 |

Appendix B2.2 Concentrations of Cu in L225 for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/21/88 |
|---|---|---|---|
| 1 | 0.2 | 0.4 | 0.4 |

Appendix B2.3 Concentrations of Fe in L225 for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/21/88 |
|---|---|---|---|
| 1 | 59 | 70 | 250 |

Appendix B2.4 Concentrations of Mn in L225 for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/21/88 |
|---|---|---|---|
| 1 | 44 | 52 | 48 |

Appendix B2.5 Concentrations of Zn in L225 for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/21/88 |
|---|---|---|---|
| 1 | 5.3 | 5.4* | 5.3 |

Appendix B3.1 Concentrations of Al in L239 for 1988.

| Depth | 1/16/88 | 2/22/88 | 3/21/88 | 5/16/88 | 6/1/88 | 7/11/88 | 8/6/88 | 9/20/88 | 10/24/88 | 10/3/88 | 12/6/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 21 | 24 | 30 | 41 | 38 | 47 | 44 | 37 | 32 | 38 | 27 |
| 5 | 24 | | 17 | 44 | 40 | 49 | 45 | | 30 | 34 | 27 |
| 10 | 23 | | 20 | 43 | 39 | 45 | 31 | | 32 | 33 | 28 |
| 15 | 27 | | 24 | 42 | 40 | 43 | 31 | | 32 | 32 | 30 |
| 20 | 27 | | 36 | 42 | 45 | 44 | 39 | | 44 | 39 | 30 |
| 25 | 31 | | 44 | 46 | 60 | 55 | 54 | | 79* | 52 | 34 |
| 30 | 44 | | 50 | | 89 | 86 | 49 | | 96 | 7 | 47 |

Appendix B3.2 Concentrations of Cu in L239 for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/21/88 | 5/16/88 | 6/13/88 | 7/11/88 | 8/8/88 | 9/20/88 | 10/24/88 | 10/3/88 | 12/5/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.4 | 0.4 | 1.7* | 0.3 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0.2 |
| 5 | 0.3 | | 0.5 | 2.4* | 0 | 0 | 0 | | 0 | 0 | 0 |
| 10 | 0.3 | | 0.5 | 0.4 | 0 | 0 | 0 | | 0.2 | 0 | 0 |
| 15 | 0.3 | | 0.6* | 0.4 | 0 | 0 | 0 | | 0 | 0 | 0 |
| 20 | 0.4 | | 0.8 | 0.4 | 0 | 0 | 0.2 | | 0 | 0 | 0 |
| 25 | 0.4 | | 0.7* | 0.3 | 0 | 0 | 0 | | 0 | 0 | 0 |
| 30 | 0.3 | | 1.1* | | 0 | 0.2 | 0 | | 0 | 0 | 0 |

Appendix B3.3 Concentrations of Fe in L239 for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/21/88 | 5/16/88 | 6/13/88 | 7/11/88 | 8/8/88 | 9/20/88 | 10/24/88 | 10/3/88 | 12/5/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 18 | 15 | 39 | 49* | 17 | 12 | 18 | 20 | 27 | 32 | 33 |
| 5 | 25 | | 18 | 47* | 31 | 33 | 18 | | 25 | 28 | 31 |
| 10 | 32 | | 20 | 38 | 32 | 27 | 22 | | 27 | 27 | 35 |
| 15 | 38 | | 38 | 47 | 39 | 30 | 25 | | 25 | 17 | 40 |
| 20 | 39 | | 64 | 52 | 59 | 41 | 36 | | 40 | 38 | 44 |
| 25 | 62 | | 100 | 83 | 80 | 74 | 63 | | 170* | 85 | 53 |
| 30 | 110 | | 130 | | 130 | 160 | 130 | | 620* | 410 | 100 |

Appendix B3.4 Concentrations of Mn in L239 for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/21/88 | 5/16/88 | 6/13/88 | 7/11/88 | 8/8/88 | 9/20/88 | 10/24/88 | 10/3/88 | 12/5/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.8 | 5.3 | 3.2 | 5.3 | 1 | 9.2 | 0 | 7.1 | 7 | 12 | 8 |
| 5 | 11 | | 7 | 5.1 | 2.9 | 5.5 | 0 | | 7.9 | 12 | 8.4 |
| 10 | 13 | | 8.7 | 5.9 | 2.5 | 5.5 | 1.5 | | 7.2 | 8.9 | 8.5 |
| 15 | 14 | | 9.2 | 5.8 | 1.7 | 4.7 | 8.7 | | 6.8 | 8.7 | 9.1 |
| 20 | 15 | | 10 | 9.8 | 4 | 27* | 8.7 | | 10 | 3.1 | 12 |
| 25 | 16 | | 15 | 9 | 4 | 18 | 8.7 | | 58* | 6.2 | 9.3 |
| 30 | 21 | | 21 | | 8.9 | 46 | 52 | | 150* | 95 | 12 |

Appendix B3.5 Concentrations of Zn in L239 for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/21/88 | 5/16/88 | 6/13/88 | 7/11/88 | 8/8/88 | 9/20/88 | 10/24/88 | 10/3/88 | 12/5/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.6 | 0.6 | 8.2 | 1.1 | 1 | 0.2 | 0.6 | 0.9 | 0.5 | 0.5 | 1.5 |
| 5 | 0.3 | | 0.7 | 0.6 | 0.6 | 0.2 | 0.4 | | 0.6 | 0.6 | 0.5 |
| 10 | 0.3 | | 0.7 | 0.5 | 0.7 | 0.2 | 0.5 | | 0.4 | 0.4 | 0.4 |
| 15 | 0.4 | | 2.3 | 0.7 | 0.6 | 0.2 | 1.4 | | 0.5 | 0.6 | 0.5 |
| 20 | 0.4 | | 0.6 | 0.7 | 0.7 | 0* | 0.5 | | 0.7 | 0.7 | 0.6 |
| 25 | 0.6 | | 0.7 | 0.6 | 0.9 | 0 | 0.6 | | 1 | 0.7 | 0.6 |
| 30 | 0.7 | | 1.4 | | 0.9 | 0.3 | 1.1 | | 1.3 | 1.2 | 0.5 |

Appendix B4.1 Concentrations of Al in L239 streams for 1988.

| Depth | 5/12/88 | 5/16/88 | 5/26/88 | 5/5/88 | 6/16/88 | 6/2/88 | 6/23/88 | 6/29/88 | 6/6/88 | 7/14/88 | 7/21/88 | 7/25/88 | 7/7/88 | 8/11/88 | 8/15/88 | 8/4/88 | 9/21/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EIF | 230 | 220 | 210 | 240 | 390 | 220 | | | 410 | 480 | 290 | | 580* | | | | |
| NE@LA | 500 | | 560 | 450 | 650 | | 640 | | | 880 | 370 | | 640 | | | | |
| NEIF | 320 | 340 | 280 | 290 | 380 | 440 | 390 | | 380 | 420 | 270 | | 370 | | | | 240 |
| NWF | 320 | 290 | 300 | 320 | 430 | 300 | 400 | 390 | 480 | 450 | 250 | 490 | 570* | | | | |
| OF | 42 | 58 | 67 | 36 | | 33 | 42 | 45 | 38 | 52 | 53 | 58 | 83 | 84 | 80 | 58 | |

Appendix B4.2 Concentrations of Cu in L239 streams for 1988.

| Depth | 5/12/88 | 5/16/88 | 5/26/88 | 5/5/88 | 6/16/88 | 6/2/88 | 6/23/88 | 6/29/88 | 6/6/88 | 7/14/88 | 7/21/88 | 7/25/88 | 7/7/88 | 8/11/88 | 8/15/88 | 8/4/88 | 9/21/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EIF | 0.5 | 0 | 0 | 0.7 | 0 | 0 | | | 0.5 | 0.5 | 0.3 | | 0.8 | | | | |
| NE@LA | 0.6 | | 0 | 0.6 | 0 | | 0 | | | 0.4 | 0.2 | | 0.6 | | | | |
| NEIF | 0.4 | 0 | 0 | 0.4 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0.3 | | | | 0 |
| NWF | 0.5 | 0 | 0 | 0.5 | 0 | 0 | 0 | 13* | 0.3 | 0.3 | 0 | 0.5 | 0.6 | | | | |
| OF | 0.3 | 0 | 0 | 0.4* | | 0 | 0 | 0 | 0 | 0.2 | 0 | 0.2 | 0 | 0 | 0.2 | 0 | |

Appendix B4.3 Concentrations of Fe in L239 streams for 1988.

| Depth | 5/12/88 | 5/16/88 | 5/26/88 | 5/5/88 | 6/16/88 | 6/2/88 | 6/23/88 | 6/29/88 | 6/6/88 | 7/14/88 | 7/21/88 | 7/25/88 | 7/7/88 | 8/11/88 | 8/15/88 | 8/4/88 | 9/21/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EIF | 250 | 250 | 270 | 270 | 520 | 300 | | | 490 | 620 | 640 | | 580 | | | | |
| NE@LA | 880 | | 890 | 560 | 1020 | | 950 | | | 990 | 1050 | | 860 | | | | |
| NEIF | 570 | 610 | 670 | 470 | 760 | 700 | 900 | | 670 | 990 | 980 | | 820 | | | | 930 |
| NWF | 290 | 280 | 310 | 280 | 450 | 310 | 480 | 450 | 450 | 440 | 440 | 650* | 500 | | | | |
| OF | 36 | 10 | 85* | 54 | | 25 | 21 | 20 | 22 | 31 | 25 | 18 | 16 | 55 | 44 | 33 | |

Appendix B4.4 Concentrations of Mn in L239 streams for 1988.

| Depth | 5/12/88 | 5/16/88 | 5/26/88 | 5/5/88 | 6/16/88 | 6/2/88 | 6/23/88 | 6/29/88 | 6/6/88 | 7/14/88 | 7/21/88 | 7/25/88 | 7/7/88 | 8/11/88 | 8/15/88 | 8/4/88 | 9/21/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EIF | 1.2 | 0.5 | 0.5 | 1.5 | 4.8 | 20 | | | 8.5 | 10 | 1 | | 37* | | | | |
| NE@LA | 39 | | 39 | 58 | 57 | | 55 | | | 95 | 27 | | 120* | | | | |
| NEIF | 29 | 58 | 32 | 28 | 30 | 32 | 0 | | 34 | 67 | 12 | | 120* | | | | 71 |
| NWF | 17 | 20 | 22 | 19 | 22 | 22 | 28 | 34 | 19 | 28 | 8.4 | 28 | 74* | | | | |
| OF | 4.8 | 9.5* | 3.8 | 6.4 | | 1.2 | 0 | 3.3 | 1.8 | 3.4 | 0 | 2.2 | 4.4 | 0.8 | 2.8 | 1.5 | |

Appendix B4.5 Concentrations of Zn in L239 streams for 1988.

| Depth | 5/12/88 | 5/16/88 | 5/26/88 | 5/5/88 | 6/16/88 | 6/2/88 | 6/23/88 | 6/29/88 | 6/6/88 | 7/14/88 | 7/21/88 | 7/25/88 | 7/7/88 | 8/11/88 | 8/15/88 | 8/4/88 | 9/21/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EIF | 2.5 | 0 | 6.8 | 3 | 3.1 | 52* | | | 2.9 | 3.2 | 4.9 | | 3.8 | | | | |
| NE@LA | 6.5 | | 6.7 | 5.6 | 8.4 | | 4.8 | | | 7.2 | 9.5 | | 7.7 | | | | |
| NEIF | 6.2 | 18 | 1.8 | 6.3 | 7.7 | 7.8 | 4.5 | | 9.8 | 6.8 | 8.5 | | 7.2 | | | | 20* |
| NWF | 4.2 | 0 | 2.1 | 1.9 | 2 | 12 | 5.5 | 33* | 2.2 | 1.1 | 2.4 | 0.5 | 8.1 | | | | |
| OF | 0.8 | 0.3 | 0.8 | 1 | | 0.6 | 0.4 | 0.2 | 1.1 | 0 | 0.5 | 1.5* | 0.2 | 0.6 | 0.8 | 0.5 | |

Appendix B5.1 Concentrations of Al in L302N for 1988.

| Depth | 1/15/88 | 2/22/88 | 3/22/88 | 5/10/88 | 5/17/88 | 5/24/88 | 5/31/88 | 6/14/88 | 6/21/88 | 6/28/88 | 6/7/88 | 7/12/88 | 7/19/88 | 7/26/88 | 7/5/88 | 8/16/88 | 8/2/88 | 8/22/88 | 8/30/88 | 9/6/88 | 9/13/88 | 9/20/88 | 9/27/88 | 9/6/88 | 10/11/88 | 10/18/88 | 10/25/88 | 10/4/88 | 12/5/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 10 | 12 | 11 | 31 | 37 | 31 | 29 | 34 | 35 | 34 | 35 | 52 | 50 | 48 | 33 | 44 | 47 | 37 | 30 | 41 | 24 | 23 | 18 | 25 | 18 | 16 | 18 | 20 | 17 |
| 4 | 11 | 13 | 14 | 38 | | | | | | | 29 | | | | 35 | | 44 | | 29 | | | | 20 | | | | 16 | | 18 |
| 6 | 10 | 13 | 15 | 34 | | | | | | | 29 | | | | 35 | | 21 | | 24 | | | | 19 | | | | 17 | | 17 |
| 9 | 16 | 20 | 18 | 36 | | | | | | | 70 | | | | 28 | | 70 | | 73 | | | | 19 | | | | 17 | | 17 |
| 11 | 25 | 32 | 26 | 39 | | | | | | | 250* | | | | 54 | | 72 | | 88 | | | | 82 | | | | 22 | | 28 |
| 13 | 61 | 47 | 55 | 42 | | | | | | | 330* | | | | 94 | | 74 | | 72 | | | | 68 | | | | 19 | | 47 |

Appendix B5.2 Concentrations of Cu in L302N for 1988.

| Depth | 1/18/88 | 2/23/88 | 3/22/88 | 5/10/88 | 5/17/88 | 5/24/88 | 5/31/88 | 6/14/88 | 6/21/88 | 6/28/88 | 6/7/88 | 7/12/88 | 7/19/88 | 7/26/88 | 7/5/88 | 8/16/88 | 8/2/88 | 8/22/88 | 8/30/88 | 9/6/88 | 9/13/88 | 9/20/88 | 9/27/88 | 9/6/88 | 10/11/88 | 10/18/88 | 10/25/88 | 10/4/88 | 12/6/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.3 | 0.8 | 1.2 | 0.2 | 0.3 | 0 | 0 | 0 | 0 | 0 | 2.2* | 0 | 0 | 0.3 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0.4 | 0.3 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0.2 | 0.5 | 1.2* | 0 | | | | | | | 0 | | | | 0 | | 0 | | 0.2 | | | | 0 | | | | 0 | | 0 |
| 6 | 0.2 | 0.5 | 0.4 | 0 | | | | | | | 0 | | | | 0 | | 0 | | 0.2 | | | | 0 | | | | 0 | | 0 |
| 9 | 0.3 | 0.2 | 0.2 | 0 | | | | | | | 17* | | | | 0.3 | | 0.3 | | 0.5 | | | | 0 | | | | 0 | | 0 |
| 11 | 0.3 | 0.3 | 0.2 | 0.2 | | | | | | | 120* | | | | 0.3 | | 0.5 | | 0.4 | | | | 0.2 | | | | 0 | | 0 |
| 13 | 0.6 | 0.9 | 0.7 | 0.2 | | | | | | | 140* | | | | 0.4 | | 0.6 | | 0.6 | | | | 0.2 | | | | 0 | | 0.3 |

Appendix B5.3 Concentrations of Fe in L302N for 1988.

| Depth | 1/18/88 | 2/23/88 | 3/22/88 | 5/10/88 | 5/17/88 | 5/24/88 | 5/31/88 | 6/14/88 | 6/21/88 | 6/28/88 | 6/7/88 | 7/12/88 | 7/19/88 | 7/26/88 | 7/5/88 | 8/16/88 | 8/2/88 | 8/22/88 | 8/30/88 | 9/6/88 | 9/13/88 | 9/20/88 | 9/27/88 | 9/6/88 | 10/11/88 | 10/18/88 | 10/25/88 | 10/4/88 | 12/6/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 110 | 80 | 96 | 160 | 120 | 150 | 130 | 120 | 150 | 130 | 130 | 97 | 120 | 92 | 120 | 77 | 99 | 80 | 98 | 82 | 71 | 110 | 130 | 58 | 220* | 150 | 170 | 180 | 130 |
| 4 | 99 | 150 | 120 | 170 | | | | | | | 130 | | | | 120 | | 100 | | 78 | | | | 120 | | | | 150 | | 140 |
| 6 | 110 | 140 | 300 | 220 | | | | | | | 190 | | | | 290 | | 140 | | 170 | | | | 140 | | | | 160 | | 140 |
| 9 | 580 | 680 | 570 | 450 | | | | | | | 420 | | | | 430 | | 970 | | 1320* | | | | 140 | | | | 160 | | 200 |
| 11 | 1110 | 1720 | 1360 | 850 | | | | | | | 2980 | | | | 2800* | | 1060 | | 1300 | | | | 1980 | | | | 160 | | 680 |
| 13 | 6340 | 5140 | 6810 | 870 | | | | | | | 2500 | | | | 3000 | | 1050 | | 1300 | | | | 1670 | | | | 170 | | 1180 |

Appendix B5.4 Concentrations of Mn in L302N for 1988.

| Depth | 1/18/88 | 2/23/88 | 3/22/88 | 5/10/88 | 5/17/88 | 5/24/88 | 5/31/88 | 6/14/88 | 6/21/88 | 6/28/88 | 6/7/88 | 7/12/88 | 7/19/88 | 7/26/88 | 7/5/88 | 8/16/88 | 8/2/88 | 8/22/88 | 8/30/88 | 9/6/88 | 9/13/88 | 9/20/88 | 9/27/88 | 9/6/88 | 10/11/88 | 10/18/88 | 10/25/88 | 10/4/88 | 12/6/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 150 | 140* | 150 | 180 | 170 | 160 | 180 | 150 | 160 | 160 | 170 | 170 | 210* | 190 | 180 | 190 | 210* | 190 | 180 | 200 | 180 | 180 | 180 | 190 | 170 | 170 | 170 | 180 | 170 |
| 4 | 150 | 160 | 150 | 180 | | | | | | | 180 | | | | 170 | | 230* | | 180 | | | | 180 | | | | 180 | | 180 |
| 6 | 150 | 160 | 200 | 190 | | | | | | | 180 | | | | 210 | | 230 | | 260* | | | | 170 | | | | 180 | | 170 |
| 9 | 190 | 200 | 190 | 210 | | | | | | | 200 | | | | 250 | | 320 | | 330* | | | | 180 | | | | 180 | | 170 |
| 11 | 210 | 210 | 210 | 220 | | | | | | | 220 | | | | 260 | | 320 | | 340 | | | | 350 | | | | 170 | | 180 |
| 13 | 340 | 280 | 350 | 210 | | | | | | | 210 | | | | 250 | | 320 | | 340 | | | | 370 | | | | 170 | | 220 |

Appendix B5.5 Concentrations of Zn in L302N for 1988.

| Depth | 1/18/88 | 2/23/88 | 3/22/88 | 5/10/88 | 5/17/88 | 5/24/88 | 5/31/88 | 6/14/88 | 6/21/88 | 6/28/88 | 6/7/88 | 7/12/88 | 7/19/88 | 7/26/88 | 7/5/88 | 8/16/88 | 8/2/88 | 8/22/88 | 8/30/88 | 9/6/88 | 9/13/88 | 9/20/88 | 9/27/88 | 9/6/88 | 10/11/88 | 10/18/88 | 10/25/88 | 10/4/88 | 12/6/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.8 | 1.7 | 1.4 | 2.2 | 0 | 2.7 | 4.7 | 8.2 | 2.2 | 17* | 5.7 | 1.7 | 3.5 | 3.8 | 1.3 | 3.2 | 5.8 | 2.1 | 3.3 | 4.8 | 3.8 | 4.5 | 3 | 2.8 | 0 | 3.1 | 2.5 | 0 | 2.2 |
| 4 | 1.1 | 1.8 | 1.8 | 2.3 | | | | | | | 1.9 | | | | 1.3 | | 2.1 | | 3.1 | | | | 4.5* | | | | 3.4 | | 2.1 |
| 6 | 1.2 | 1.5 | 1.4 | 2.2 | | | | | | | 4* | | | | 1.4 | | 2.5 | | 3 | | | | 2.7 | | | | 2.2 | | 1.9 |
| 9 | 1.2 | 1.2 | 1.3 | 1.8 | | | | | | | 8.3* | | | | 2.1 | | 2.3 | | 2.4 | | | | 2.9 | | | | 2.2 | | 2.3 |
| 11 | 1 | 1 | 1.4 | 1.9 | | | | | | | 57* | | | | 1.9 | | 3.4 | | 2.3 | | | | 14 | | | | 2.2 | | 2 |
| 13 | 0.8 | 1.8 | 4.8 | 2.9 | | | | | | | 84* | | | | 1.8 | | 4.2 | | 3 | | | | 2.9 | | | | 2.4 | | 2.4 |

Appendix B6.1 Concentrations of Al in L302S for 1988.

| Depth | 1/18/88 | 2/23/88 | 3/22/88 | 5/10/88 | 5/17/88 | 5/24/88 | 5/31/88 | 6/14/88 | 6/21/88 | 6/28/88 | 6/7/88 | 7/12/88 | 7/19/88 | 7/26/88 | 7/5/88 | 8/16/88 | 8/2/88 | 8/22/88 | 8/30/88 | 9/6/88 | 9/13/88 | 9/20/88 | 9/27/88 | 9/6/88 | 10/11/88 | 10/18/88 | 10/25/88 | 10/4/88 | 12/6/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 40 | 43 | 31 | 52 | 49 | 41 | 50 | 49 | 54 | 46 | 47 | 62 | 63 | 60 | 54 | 57 | 57 | 47 | 45 | 53 | 45 | 45 | 45 | 43 | 6* | 43 | 58 | 48 | 66 |
| 4 | 37 | 39 | 30 | 49 | | | | | | | 41 | | | | 49 | | 58 | | 49 | | | | 46 | | | | 63 | | 67 |
| 6 | 35 | 36 | 29 | 48 | | | | | | | 29 | | | | 48 | | 48 | | 47 | | | | 45 | | | | 60 | | 67 |
| 9 | 40 | 36 | 25 | 42 | | | | | | | 21 | | | | 14 | | 25 | | 49 | | | | 48 | | | | 63 | | 63 |
| 10 | 43 | 45 | 51 | 36 | | | | | | | 33 | | | | 47 | | 98* | | 81 | | | | 44 | | | | 51 | | 61 |

Appendix B6.2 Concentrations of Cu in L302S for 1988.

| Depth | 1/18/88 | 2/23/88 | 3/22/88 | 5/10/88 | 5/17/88 | 5/24/88 | 5/31/88 | 6/14/88 | 6/21/88 | 6/28/88 | 6/7/88 | 7/12/88 | 7/19/88 | 7/26/88 | 7/5/88 | 8/16/88 | 8/2/88 | 8/22/88 | 8/30/88 | 9/6/88 | 9/13/88 | 9/20/88 | 9/27/88 | 9/6/88 | 10/11/88 | 10/18/88 | 10/25/88 | 10/4/88 | 12/6/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.3 | 0 | 0.2 | 0.7 | 0.2 | 0 | 5.4* | 0 | 0 | 0 | 1.8 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.7 | 0 |
| 4 | 0.2 | 0 | 0.2 | 0.7* | | | | | | | 0.3 | | | | 0 | | 0 | | 0 | | | | 0 | | | | 0 | | 0 |
| 6 | 0 | 0 | 0 | 0 | | | | | | | 0 | | | | 0.4* | | 0.3 | | 0 | | | | 0 | | | | 0 | | 0 |
| 9 | 0 | 0 | 0 | 0.2 | | | | | | | 0 | | | | 0.5* | | 0 | | 0 | | | | 0 | | | | 0 | | 0 |
| 10 | 0 | 0.2 | 0.3 | 0 | | | | | | | 0 | | | | 0 | | 0 | | 0.2 | | | | 0 | | | | 0 | | 0 |

Appendix B6.3 Concentrations of Fe in L302S for 1988.

| Depth | 1/18/88 | 2/23/88 | 3/22/88 | 5/10/88 | 5/17/88 | 5/24/88 | 5/31/88 | 6/14/88 | 6/21/88 | 6/28/88 | 6/7/88 | 7/12/88 | 7/19/88 | 7/26/88 | 7/5/88 | 8/16/88 | 8/2/88 | 8/22/88 | 8/30/88 | 9/6/88 | 9/13/88 | 9/20/88 | 9/27/88 | 9/6/88 | 10/11/88 | 10/18/88 | 10/25/88 | 10/4/88 | 12/6/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 380 | 540* | 260 | 290 | 170 | 190 | 170 | 83 | 74 | 72 | 94 | 100 | 150 | 160 | 75 | 180 | 140 | 340 | 340 | 160 | 320 | 280 | 310 | 300 | 200 | 200 | 210 | 240 | 190 |
| 4 | 400 | 490 | 300 | 270 | | | | | | | 130 | | | | 81 | | 100 | | 380 | | | | 290 | | | | 250 | | 170 |
| 6 | 470 | 520 | 670* | 430 | | | | | | | 180 | | | | 100 | | 310 | | 330 | | | | 290 | | | | 200 | | 190 |
| 9 | 680 | 810 | 280 | 720 | | | | | | | 610 | | | | 300 | | 1020 | | 320 | | | | 310 | | | | 210 | | 180 |
| 10 | 1900 | 5590 | 7810 | 1040 | | | | | | | 1500 | | | | 7400 | | 1160 | | 1330 | | | | 300 | | | | 190 | | 220 |

Appendix B6.4 Concentrations of Mn in L302S for 1988.

| Depth | 1/18/88 | 2/23/88 | 3/22/88 | 5/10/88 | 5/17/88 | 5/24/88 | 5/31/88 | 6/14/88 | 6/21/88 | 6/28/88 | 6/7/88 | 7/12/88 | 7/19/88 | 7/26/88 | 7/5/88 | 8/16/88 | 8/2/88 | 8/22/88 | 8/30/88 | 9/6/88 | 9/13/88 | 9/20/88 | 9/27/88 | 9/6/88 | 10/11/88 | 10/18/88 | 10/25/88 | 10/4/88 | 12/6/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 210 | 220 | 220 | 190 | 180 | 190 | 180 | 190 | 190 | 230 | 180 | 230 | 260 | 270 | 230 | 320 | 290 | 340 | 340 | 310 | 350 | 360 | 370 | 350 | 350 | 350 | 360 | 340 | 420 |
| 4 | 210 | 210 | 210 | 190 | | | | | | | 170 | | | | 240 | | 300 | | 340 | | | | 370 | | | | 360 | | 400 |
| 6 | 210 | 210 | 220 | 200 | | | | | | | 180 | | | | 230 | | 300 | | 330 | | | | 350 | | | | 360 | | 390 |
| 9 | 210 | 210 | 210 | 220 | | | | | | | 150 | | | | 200 | | 290 | | 330 | | | | 360 | | | | 360 | | 380 |
| 10 | 230 | 270 | 310 | 200 | | | | | | | 200 | | | | 330 | | 390 | | 380 | | | | 360 | | | | 360 | | 390 |

Appendix B6.5 Concentrations of Zn in L3025 for 1988

| Depth | 1/15/88 | 2/23/88 | 3/22/88 | 5/10/88 | 5/17/88 | 5/24/88 | 5/31/88 | 6/14/88 | 6/21/88 | 6/28/88 | 6/7/88 | 7/12/88 | 7/19/88 | 7/26/88 | 7/5/88 | 8/1/88 | 8/2/88 | 8/29/88 | 9/30/88 | 9/6/88 | 9/13/88 | 9/20/88 | 9/27/88 | 9/6/88 | 10/11/88 | 10/18/88 | 10/26/88 | 10/4/88 | 12/5/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.2 | 3.6 | 2.9 | 3.8 | 0* | 4.7 | 5.3 | 3.8 | 3.5 | 2.6 | 5.8 | 2.7 | 6 | 3.6 | 2.7 | 6.4 | 3.6 | 9* | 3.8 | 3.7 | 4.3 | 4.5 | 4.5 | 4.3 | 8.6 | 5.5 | 7.4 | 0* | 8.6* |
| 4 | 3.1 | 3.5 | 2.8 | 3.4 | | | | | | | 3.2 | | | | 2.8 | | 3.6 | | 4.5 | | | | 4.4 | | | | 5 | | 7.6* |
| 6 | 2.8 | 3 | 2.8 | 2.4 | | | | | | | 2.7 | | | | 2.8 | | 5.1 | | 3.8 | | | | 5.2 | | | | 5 | | 9* |
| 8 | 3 | 3 | 1.9 | 2 | | | | | | | 1.5 | | | | 2.4 | | 1.7 | | 4 | | | | 4.6 | | | | 7 | | 9* |
| 10 | 2.3 | 1 | 0.9 | 1.7 | | | | | | | 1.7 | | | | 1.5 | | 2.5 | | 4.3 | | | | 4.3 | | | | 8.5 | | 9.9* |

Appendix B7.1 Concentrations of Al in L362 for 1988

| Depth | 1/20/88 | 2/24/88 | 5/17/88 |
|---|---|---|---|
| 1 | 4 | 3 | 17 |

Appendix B7.2 Concentrations of Cu in L362 for 1988

| Depth | 1/20/88 | 2/24/88 | 5/17/88 |
|---|---|---|---|
| 1 | 0.3 | 0.6 | 0.4 |

Appendix B7.3 Concentrations of Fe in L362 for 1988

| Depth | 1/20/88 | 2/24/88 | 5/17/88 |
|---|---|---|---|
| 1 | 15 | 11 | 38 |

Appendix B7.4 Concentrations of Mn in L362 for 1988

| Depth | 1/20/88 | 2/24/88 | 5/17/88 |
|---|---|---|---|
| 1 | 4 | 1 | 9.1 |

Appendix B7.5 Concentrations of Zn in L362 for 1988

| Depth | 1/20/88 | 2/24/88 | 5/17/88 |
|---|---|---|---|
| 1 | 0.3 | 0.3 | 0 |

Appendix C1.1 Concentrations of Al in L223 for 1988

| Depth | 1/17/88 | 2/21/88 | 3/21/88 | 5/23/88 | 6/13/88 | 6/5/88 | 7/17/88 | 7/31/88 | 7/4/88 | 8/14/88 | 8/25/88 | 9/11/88 | 9/18/88 | 9/25/88 | 10/10/88 | 10/30/88 | 12/12/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | 4 | 4 | 24 | 21 | 18 | 19 | 15 | 18 | 12 | 14 | 12 | 13 | 23 | 17 | 18 | 9 |
| 4 | 5 | 5 | 5 | 29 | 22 | | 20 | | | 15 | | 12 | | | 18 | 18 | 10 |
| 8 | 6 | 8 | 10 | 22 | 19 | | 19 | | | 15 | | 14 | | | 18 | 19 | 17 |
| 10 | 15 | 11 | 10 | 29* | 18 | | 17 | | | 18 | | 13 | | | 19 | 20 | 19 |
| 12 | 38 | 44 | 44 | 30 | 19 | | 19 | | | 33 | | 34 | | | 17 | 19 | 54 |
| 14 | 120 | 106 | 60 | 230* | 37 | | 41 | | | 43 | | 45 | | | 51 | 37 | 180* |
| IF | | | | 70 | 110* | 35 | 63 | 69 | 28 | 39 | 72 | 90 | 32 | 12 | 48 | 261* | |

Appendix C1.2 Concentrations of Cu in L223 for 1988

| Depth | 1/17/88 | 2/21/88 | 3/21/88 | 5/23/88 | 6/13/88 | 6/5/88 | 7/17/88 | 7/31/88 | 7/4/88 | 8/14/88 | 8/25/88 | 9/11/88 | 9/18/88 | 9/25/88 | 10/10/88 | 10/30/88 | 12/12/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.9* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | | 0 | | | 0 | | 0 | | | 0 | 0 | 0.2 |
| 8 | 0 | 0 | 0 | 0 | 0 | | 0 | | | 0 | | 0 | | | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | | 0 | | | 0 | | 0 | | | 0 | 0 | 0 |
| 12 | 0.3 | 0.3 | 0.3 | 0 | 0 | | 0 | | | 0.3 | | 0.4 | | | 0 | 0 | 0.2 |
| 14 | 0.6 | 0.5 | 0.3 | 1.2 | 0.5 | | 0.7 | | | 0.4 | | 0.4 | | | 0.6 | 0 | 0.9 |
| IF | | | | 0 | 0.4 | 0 | 0 | 0 | 0 | 0.3 | 0 | 0.3 | 0 | 0 | 0.7* | 0.4 | |

Appendix C1.3 Concentrations of Fe in L223 for 1988

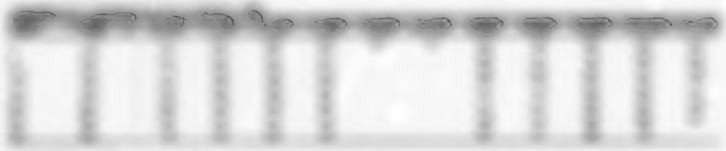
| Depth | 1/17/88 | 2/21/88 | 3/21/88 | 5/23/88 | 6/13/88 | 6/5/88 | 7/17/88 | 7/31/88 | 7/4/88 | 8/14/88 | 8/25/88 | 9/11/88 | 9/18/88 | 9/25/88 | 10/10/88 | 10/30/88 | 12/12/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 70 | 43 | 30 | 58 | 28 | 26 | 21 | 27 | 25 | 27 | | | | | 180* | 132* | 74 |
| 4 | 80 | 42 | 34 | 67 | 22 | | 26 | | | 19 | | | | | 170* | 132* | 85 |
| 8 | 80 | 52 | 110 | 160 | 66 | | 65 | | | 66 | | | | | 170 | 127 | 110 |
| 10 | 310 | 260 | 400 | 300 | 150 | | 150 | | | 490* | | 940* | | | 180 | 138 | 188 |
| 12 | 2180 | 3530* | 1900 | 660 | 280 | | 860 | | | 2700 | | 4880* | | | 250 | 137 | 841 |
| 14 | 13500 | 1040 | 1900 | 1060 | 2510 | | 3080 | | | 4500 | | 6760 | | | 14000 | 211 | 5598 |
| IF | | | | 180 | 270 | 93 | 250 | 450 | 92 | 530 | 580 | 1480* | 1290 | 600 | 950 | 1940* | |

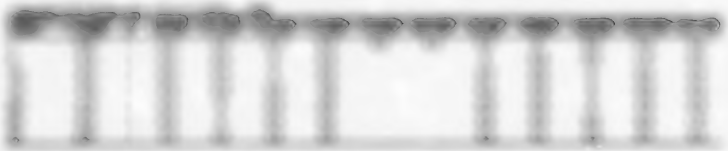
Appendix C1.4 Concentrations of Mn in L223 for 1988

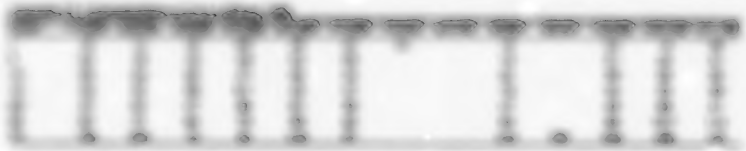
| Depth | 1/17/88 | 2/21/88 | 3/21/88 | 5/23/88 | 6/13/88 | 6/5/88 | 7/17/88 | 7/31/88 | 7/4/88 | 8/14/88 | 8/25/88 | 9/11/88 | 9/18/88 | 9/25/88 | 10/10/88 | 10/30/88 | 12/8/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 59 | 62 | 65 | 51 | 49 | 51 | 54 | 58 | 51 | 53 | 43 | 35 | 61* | 67 | 53 | 66 | 66 |
| 4 | 45 | 48 | 51 | 47 | 49 | | 53 | | | 47 | | 70 | | | 53 | 67 | 63.03 |
| 8 | 53 | 58 | 67 | 56 | 62 | | 76 | | | 68* | | 45 | | | 55 | 66 | 69 |
| 10 | 100 | 65 | 150 | 150 | 69 | | 66 | | | 120 | | 230* | | | 48 | 71 | 70 |
| 12 | 120 | 100 | 370* | 280 | 91 | | 120 | | | 180 | | 230 | | | 53 | 67 | 66 |
| 14 | 210 | 470 | 380 | 1000* | 160 | | 150 | | | 180 | | 240 | | | 370 | 67.68 | 120.2 |
| IF | | | | 180* | 9 | 3 | 16 | 29 | 9 | 22 | 19 | 40 | 50 | 44 | 48 | 66 | |

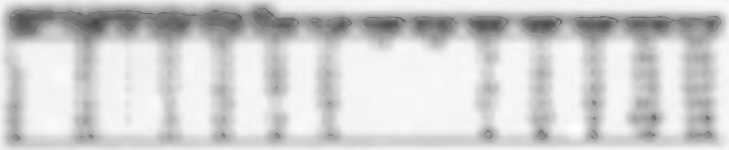
Appendix C1.5 Concentrations of Zn in L223 for 1988

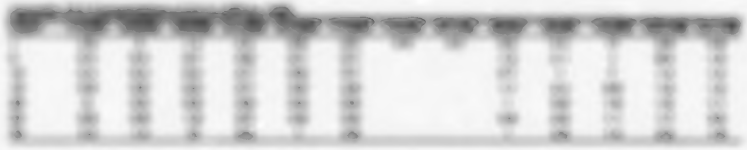
| Depth | 1/17/88 | 2/21/88 | 3/21/88 | 5/23/88 | 6/13/88* | 6/5/88 | 7/17/88 | 7/31/88 | 7/4/88 | 8/14/88 | 8/25/88 | 9/11/88 | 9/18/88 | 9/25/88 | 10/10/88 | 10/30/88 | 12/12/88 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.9* | 0.8 | 0.9 | 1.2 | 0.8 | 1.1 | 0.8 | 1.1 | 0.8 | 1.1 | 0.8 | 0.8 | 2 | 0.8 | 2.3 | 1.3 | 1.3 |
| 4 | 0.7 | 0.8 | 1.5 | 1.2 | 0.8 | | 0.7 | | | 0.8 | | 0.8 | | | 1 | 1.1 | 1.5 |
| 8 | 1.1 | 1.1 | 2 | 1.2 | 0.9 | | 0.9 | | | 1.1 | | 0.8 | | | 1.1 | 1 | 1.3 |
| 10 | 1.4 | 1.2 | 2.2* | 1.2 | 1.3 | | 0.9 | | | 1.4 | | 1.1 | | | 0.8 | 0.8 | 1.4 |
| 12 | 1.5 | 0.9 | 4.2* | 1.2 | 0.9 | | 1.2 | | | 0.8 | | 0.8 | | | 1 | 0.8 | 1.5 |
| 14 | 0.8 | 1 | 0.9 | 4.2* | 1 | | 0.8 | | | 1 | | 0.8 | | | 1.1 | 1.3 | 1.4 |
| IF | | | | 4.2 | 3.7 | 1.3 | 1.8 | 1.2 | 1 | 2.7 | 1.7 | 4.9 | 3.7 | 2.9 | 0.8 | 0.8* | |

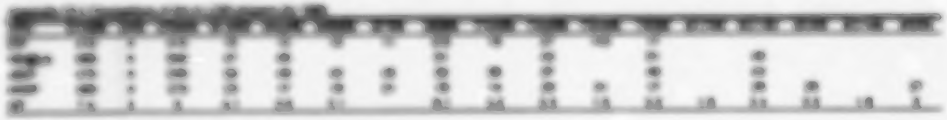












Appendix CS 1 Concentrations of Al in L302S for 1999

| Depth | 3/17/99 | 3/21/99 | 3/31/99 | 5/24/99 | 6/20/99 | 6/5/99 | 7/15/99 | 7/4/99 | 8/1/99 | 8/15/99 | 8/25/99 | 9/12/99 | 9/15/99 | 9/25/99 | 10/11/99 | 10/30/99 | 12/12/99 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 72 | 75 | 73 | 73 | 66 | 57 | 66 | 74 | 64 | 57 | 46 | 63 | 50 | 45 | 52 | 93 | 129* |
| 4 | 66 | 48 | 52 | 65 | 65 | | 60 | | | 56 | | 43 | | | 51 | 94 | 111* |
| 6 | 57 | 53 | 55 | 78 | 64 | | 63 | | | 54 | | 47 | | | 64 | 95 | 103* |
| 8 | 48 | 52 | 48 | 77 | 66 | | 75 | | | 56 | | 48 | | | 52 | 95 | 90 |
| 10 | 43 | 44 | 47 | 47 | 50 | | 65 | | | 93 | | 100 | | | 48 | 88 | 82 |

Appendix CS 2 Concentrations of Cu in L302S for 1999

| Depth | 3/17/99 | 3/21/99 | 3/31/99 | 5/24/99 | 6/20/99 | 6/5/99 | 7/15/99 | 7/4/99 | 8/1/99 | 8/15/99 | 8/25/99 | 9/12/99 | 9/15/99 | 9/25/99 | 10/11/99 | 10/30/99 | 12/12/99 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0.4* | 0 | | 0 | | | 0 | | 0 | | | 0 | 0.2 | 0 |
| 6 | 0 | 0 | 0 | 0 | 0 | | 0 | | | 0 | | 0.3* | | | 0 | 0 | 0 |
| 8 | 0.2 | 0 | 0 | 0 | 0 | | 0 | | | 0 | | 0 | | | 0.4 | 0.6* | 0 |
| 10 | 0 | 0.3 | 0.2 | 0 | 0 | | 0 | | | 0.3 | | 0 | | | 0 | 0 | 0 |

Appendix C5.3 Concentrations of Fe in L302S for 1989.

| Depth | 1/17/89 | 2/21/89 | 3/21/89 | 5/24/89 | 6/20/89 | 6/6/89 | 7/18/89 | 7/4/89 | 8/1/89 | 8/15/89 | 8/29/89 | 9/12/89 | 9/18/89 | 9/25/89 | 10/11/89 | 10/30/89 | 12/12/89 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 200 | 180 | 110 | 110 | 120 | 88 | 104 | 82 | 120 | 200 | 280 | 480 | 480 | 610 | 580 | 439 | 390 |
| 4 | 180 | 240 | 190 | 140 | 110 | | 130 | | | 190 | | 480 | | | 520 | 433 | 385 |
| 6 | 280 | 170 | 150 | 190 | 110 | | 230 | | | 180 | | 450 | | | 650* | 438 | 377 |
| 8 | 430 | 170 | 130 | 150 | 120 | | 620 | | | 4040* | | 440 | | | 560 | 431 | 424 |
| 10 | 11800 | 970 | 950 | 1020 | 850 | | 7390 | | | 11810 | | 13200 | | | 790 | 430 | 811 |

Appendix C5.4 Concentrations of Mn in L302S for 1989.

| Depth | 1/17/89 | 2/21/89 | 3/21/89 | 5/24/89 | 6/20/89 | 6/6/89 | 7/18/89 | 7/4/89 | 8/1/89 | 8/15/89 | 8/29/89 | 9/12/89 | 9/18/89 | 9/25/89 | 10/11/89 | 10/30/89 | 12/12/89 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 470 | 250 | 220 | 190 | 380 | 390 | 420 | 390 | 430 | 440 | 410 | 410 | 410 | 410 | 420 | 485.8 | 533.6 |
| 4 | 420 | 230 | 220 | 190 | 370 | | 430 | | | 450 | | 400 | | | 410 | 466.8 | 517.4 |
| 6 | 430 | 230 | 210 | 200 | 370 | | 400 | | | 450 | | 410 | | | 440 | 469.8 | 520.4 |
| 8 | 410 | 220 | 210 | 200 | 410 | | 420 | | | 470 | | 410 | | | 410 | 491 | 480.8 |
| 10 | 380 | 380 | 380 | 400 | 350 | | 430 | | | 460 | | 450 | | | 400 | 485.8 | 463.4 |

Appendix C5.5 Concentrations of Zn in L302S for 1989.

| Depth | 1/17/89 | 2/21/89 | 3/21/89 | 5/24/89 | 6/20/89 | 6/6/89 | 7/18/89 | 7/4/89 | 8/1/89 | 8/15/89 | 8/29/89 | 9/12/89 | 9/18/89 | 9/25/89 | 10/11/89 | 10/30/89 | 12/12/89 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7.4 | 11* | 11* | 5.8 | 5.3 | 5.3 | 4.2 | 4.4 | 4.3 | 4.8 | 4.5 | 4.8 | 4.8 | 6.5 | 6.7 | 6.9 | 8.7 |
| 4 | 7.8 | 7.5 | 7.8 | 12* | 5 | | 4.2 | | | 4.5 | | 4.6 | | | 6.3 | 6.6 | 8.6 |
| 6 | 7.8 | 7 | 8.2 | 11 | 4.9 | | 9 | | | 4.8 | | 8.4 | | | 5.9 | 6.6 | 8.2 |
| 8 | 7 | 8.4 | 10 | 7.5 | 9.1 | | 11 | | | 7.4 | | 4.8 | | | 6 | 7.3 | 7.7 |
| 10 | 3.5 | 3.4 | 2.4 | 7.5 | 4.6 | | 8.8 | | | 5.5 | | 4.2 | | | 5.7 | 6.6 | 6.7 |

Appendix C6.1 Concentrations of Al in L362 for 1989.

| Depth | 2/22/89 |
|---|---|
| 1 | 3 |
| 4 | 4 |
| 7 | 5 |
| 10 | 21 |
| 13 | 49 |

Appendix C6.2 Concentrations of Cu in L362 for 1989.

| Depth | 2/22/89 |
|---|---|
| 1 | 0.2 |
| 4 | 0 |
| 7 | 0.2 |
| 10 | 0.2 |
| 13 | 0.4 |

Appendix C6.3 Concentrations of Fe in L362 for 1989.

| Depth | 2/22/89 |
|---|---|
| 1 | 11 |
| 4 | 18 |
| 7 | 33 |
| 10 | 380 |
| 13 | 1030 |

Appendix C6.4 Concentrations of Mn in L362 for 1989.

| Depth | 2/22/89 |
|---|---|
| 1 | 2 |
| 4 | 3.9 |
| 7 | 13 |
| 10 | 160 |
| 13 | 410 |

Appendix C6.5 Concentrations of Zn in L362 for 1989.

| Depth | 2/22/89 |
|---|---|
| 1 | 0.2 |
| 4 | 0 |
| 7 | 0.3 |
| 10 | 0.5 |
| 13 | 0.7 |

Appendix D1.1 Concentrations of Al in L223 for 1990.

| Depth | 1/16/90 | 2/13/90 |
|---|---|---|
| 1 | 10 | 8.8 |
| 4 | 13 | 12 |
| 8 | 14 | 11 |
| 10 | 26 | 12 |
| 12 | 53 | 62 |
| 14 | 166 | 149 |

Appendix D1.2 Concentrations of Cu in L223 for 1990.

| Depth | 1/16/90 | 2/13/90 |
|---|---|---|
| 1 | 0 | 0 |
| 4 | 0 | 0.3 |
| 8 | 0 | 0 |
| 10 | 0 | 0 |
| 12 | 0.3 | 0.5 |
| 14 | 0.8 | 0.6 |

Appendix D1.3 Concentrations of Fe in L223 for 1990.

| Depth | 1/16/90 | 2/13/90 |
|---|---|---|
| 1 | 60 | 51 |
| 4 | 78 | 68 |
| 8 | 84 | 93 |
| 10 | 364 | 84 |
| 12 | 1607 | 4748 |
| 14 | 13110 | 12138 |

Appendix D1.4 Concentrations of Mn in L223 for 1990.

| Depth | 1/16/90 | 2/13/90 |
|---|---|---|
| 1 | 67 | 62 |
| 4 | 57 | 64 |
| 8 | 60 | 64 |
| 10 | 63 | 64 |
| 12 | 100 | 117 |
| 14 | 194 | 190 |

Appendix D1.5 Concentrations of Zn in L223 for 1990.

| Depth | 1/16/90 | 2/13/90 |
|---|---|---|
| 1 | 1.5 | 1.2 |
| 4 | 1.3 | 1.9 |
| 8 | 1.4 | 1 |
| 10 | 1.5 | 1 |
| 12 | 1.5 | 1 |
| 14 | 1.5 | 1.3 |

Appendix D2.1 Concentrations of Al in L239 for 1990.

| Depth | 1/15/90 | 2/12/90 | 3/12/90 |
|---|---|---|---|
| 1 | 32 | 31 | 1.85 |
| 5 | 34 | 31 | |
| 10 | 35 | 31 | |
| 15 | 38 | 36 | |
| 20 | 39 | 38 | |
| 25 | 50 | 62 | |
| 30 | 178 | 73 | 32.2 |

Appendix D2.2 Concentrations of Cu in L239 for 1990.

| Depth | 1/15/90 | 2/12/90 |
|---|---|---|
| 1 | 0.3 | 0.3 |
| 5 | 0.3 | 0.3 |
| 10 | 0.6 | 0.4 |
| 15 | 0.3 | 0.6 |
| 20 | 0.2 | 0.3 |
| 25 | 0.5 | 0.5 |
| 30 | 0.4 | 0.5 |

Appendix D2.3 Concentrations of Fe in L239 for 1990.

| Depth | 1/15/90 | 2/12/90 | 3/12/90 |
|---|---|---|---|
| 1 | 25 | 17 | |
| 5 | 33 | 21 | |
| 10 | 38 | 21 | |
| 15 | 33 | 35 | |
| 20 | 55 | 49 | |
| 25 | 82 | 109 | |
| 30 | 1080 | 136 | |

Appendix D2.4 Concentrations of Mn in L239 for 1990.

| Depth | 1/15/90 | 2/12/90 | 3/12/90 |
|---|---|---|---|
| 1 | 8.6 | 7.2 | |
| 5 | 8.7 | 7.5 | |
| 10 | 8.6 | 1.1 | |
| 15 | 8.7 | 8.1 | |
| 20 | 12 | 10 | |
| 25 | 11 | 9.1 | |
| 30 | 264 | 22 | |

Appendix D2.5 Concentrations of Zn in L239 for 1990.

| Depth | 1/15/90 | 2/12/90 | 3/12/90 | |
|---|---|---|---|---|
| 1 | 1 | 0.6 | 1 | |
| 5 | 1.1 | 0.5 | | |
| 10 | 0.7 | 2 | | |
| 15 | 1.2 | 0.6 | | |
| 20 | 2.9 | 0.8 | | |
| 25 | 1.5 | 1.5 | | |
| 30 | 2.4 | 2 | 2.7 | |

Appendix D3.1 Concentrations of Al in L302N for 1990.

| Depth | 1/15/90 | 2/13/90 |
|---|---|---|
| 1 | 47 | 47 |
| 4 | 45 | 41 |
| 6 | 47 | 41 |
| 9 | 42 | 38 |
| 11 | 38 | 41 |
| 13 | 42 | 117 |

Appendix D3.2 Concentrations of Cu in L302N for 1990.

| Depth | 1/15/90 | 2/13/90 |
|---|---|---|
| 1 | 0 | 0.3 |
| 4 | 0.3 | 0 |
| 6 | 0 | 0.2 |
| 9 | 0 | 0 |
| 11 | 0 | 0.3 |
| 13 | 0.9 | 0.7 |

Appendix D3.3 Concentrations of Fe in L302N for 1990.

| Depth | 1/15/90 | 2/13/90 |
|---|---|---|
| 1 | 203 | 217 |
| 4 | 185 | 176 |
| 6 | 245 | 209 |
| 9 | 373 | 469 |
| 11 | 721 | 1113 |
| 13 | 3499 | 8904 |

Appendix D3.4 Concentrations of Mn in L302N for 1990.

| Depth | 1/15/90 | 2/13/90 |
|---|---|---|
| 1 | 249 | 246 |
| 4 | 238 | 243 |
| 6 | 244 | 248 |
| 9 | 245 | 256 |
| 11 | 255 | 261 |
| 13 | 295 | 307 |

Appendix D3.5 Concentrations of Zn in L302N for 1990.

| Depth | 1/15/90 | 2/13/90 |
|---|---|---|
| 1 | 4.1 | 4.7 |
| 4 | 4.1 | 4.5 |
| 6 | 4.1 | 4.4 |
| 9 | 4.3 | 3.6 |
| 11 | 4.3 | 4.5 |
| 13 | 3.8 | 1.8 |

Appendix D4.1 Concentrations of Al in L302S for 1990.

| Depth | 1/15/90 | 2/13/90 |
|---|---|---|
| 1 | 122 | 108 |
| 4 | 108 | 101 |
| 6 | 105 | 102 |
| 8 | 75 | 83 |
| 10 | 54 | 85 |

Appendix D4.2 Concentrations of Cu in L302S for 1990.

| Depth | 1/15/90 | 2/13/90 |
|---|---|---|
| 1 | 0.3 | 0 |
| 4 | 0.5 | 0 |
| 6 | 0 | 0.4 |
| 8 | 0 | 0.3 |
| 10 | 0.3 | 0.2 |

Appendix D4.3 Concentrations of Fe in L302S for 1990.

| Depth | 1/15/90 | 2/13/90 |
|---|---|---|
| 1 | 438 | 323 |
| 4 | 376 | 315 |
| 6 | 391 | 318 |
| 8 | 663 | 721 |
| 10 | 4227 | 8220 |

Appendix D4.4 Concentrations of Mn in L302S for 1990.

| Depth | 1/15/90 | 2/13/90 |
|---|---|---|
| 1 | 573 | 546 |
| 4 | 495 | 499 |
| 6 | 511 | 521 |
| 8 | 483 | 484 |
| 10 | 430 | 445 |

Appendix D4.5 Concentrations of Zn in L302S for 1990.

| Depth | 1/15/90 | 2/13/90 |
|---|---|---|
| 1 | 3.1 | 2.7 |
| 4 | 2.8 | 2.8 |
| 6 | 2.7 | 5.5 |
| 8 | 5.2 | 5.1 |
| 10 | 3.4 | 1.8 |

Appendix E1.1 Concentrations of Al in L223 for 1991.

| Depth | 5/17/91 | 7/5/91 | 7/30/91 | 8/12/91 | 8/26/91 | 9/23/91 | 9/4/91 | 9/9/91 | 10/29/91 | 10/7/91 | 12/10/91 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14 | 13 | 13 | 9 | 14 | 23 | 17 | 7 | 18 | 24 | 14 |
| 4 | | 13 | 13 | | 7 | 20 | 15 | | 19 | | 14 |
| 8 | | 14 | 11 | | 10 | 22 | 33* | | 19 | | 18 |
| 10 | | 26 | 12 | | 11 | 19 | 24 | | 21 | | 32 |
| 12 | | 19 | 15 | | 22 | 27 | 33 | | 20 | | 52* |
| 14 | | 26 | 39 | | 40 | 44 | 140 | | 27 | | 131 |

Appendix E1.2 Concentrations of Cu in L223 for 1991.

| Depth | 5/17/91 | 7/5/91 | 7/30/91 | 8/12/91 | 8/26/91 | 9/23/91 | 9/4/91 | 9/9/91 | 10/29/91 | 10/7/91 | 12/10/91 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0.3 | 0.3 | 1.1 | 0 | 0.9 | 41* | 0 | 0.3 | 0.4 |
| 4 | | 0 | 0 | | 0 | 0 | 0 | | 0 | | 0 |
| 8 | | 0 | 0 | | 0 | 0.2 | 1 | | 0 | | 0.4 |
| 10 | | 0 | 0.2 | | 0 | 0 | 0 | | 0 | | 0 |
| 12 | | 0 | 0 | | 0 | 0.3 | 0 | | 0.3 | | 0.8 |
| 14 | | 0.3 | 0.3 | | 0.2 | 0.5 | 0.7 | | 0 | | 0.6 |

Appendix E1.3 Concentrations of Fe in L223 for 1991.

| Depth | 5/17/91 | 7/5/91 | 7/30/91 | 8/12/91 | 8/26/91 | 9/23/91 | 9/4/91 | 9/9/91 | 10/29/91 | 10/7/91 | 12/10/91 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 41 | 17 | 12 | 34 | 106 | 28 | 18 | 122 | 186 | 97 |
| 4 | | 21 | 18 | | 17 | 100 | 30 | | 117 | | 100 |
| 8 | | 132 | 29 | | 52 | 119 | 85 | | 143 | | 125 |
| 10 | | 144 | 94 | | 210 | 822* | 113 | | 121 | | 208 |
| 12 | | 290 | 622 | | 1527 | 3950* | 254 | | 133 | | 586 |
| 14 | | 1413 | 3347 | | 4828 | 8448 | 1542 | | 154 | | 3283 |

Appendix E1.4 Concentrations of Mn in L223 for 1991.

| Depth | 5/17/91 | 7/5/91 | 7/30/91 | 8/12/91 | 8/26/91 | 9/23/91 | 9/4/91 | 9/9/91 | 10/29/91 | 10/7/91 | 12/10/91 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 20 | 25 | 14 | 13 | 35 | 35 | 43 | 14 | 45 | 52 | 40 |
| 4 | | 25 | 15 | | 14 | 33 | 40 | | 43 | | 38 |
| 8 | | 62 | 44 | | 42 | 38 | 59 | | 44 | | 50 |
| 10 | | 88 | 131 | | 189 | 226 | 54 | | 44 | | 82 |
| 12 | | 139 | 314 | | 451 | 504 | 88 | | 45 | | 91 |
| 14 | | 300 | 453 | | 525 | 548 | 108 | | 41 | | 121 |

Appendix E1.5 Concentrations of Zn in L223 for 1991.

| Depth | 5/17/91 | 7/3/91 | 7/30/91 | 8/12/91 | 8/26/91 | 9/23/91 | 9/4/91 | 9/9/91 | 10/29/91 | 10/7/91 | 12/10/91 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.4 | 0.9 | 0.5 | 0.5 | 3.5* | 0 | 1 | 0.3 | 0 | 0.7 | 0 |
| 4 | | 3.2 | 2 | | 0.5 | 0 | 0.7 | | 0.6 | | 0.2 |
| 6 | | 0.6 | 0.2 | | 1 | 0.9 | 5.1* | | 0.2 | | 0 |
| 10 | | 1.6 | 4* | | 1.2 | 0.3 | 0.6 | | 0.5 | | 0.2 |
| 12 | | 0.6 | 0.6 | | 0.5 | 0 | 1.3 | | 0.4 | | 0.2 |
| 14 | | 1.3 | 2.2 | | 0 | 0.4 | 1.9 | | 0.8 | | 0 |

Appendix E2.1 Concentrations of Al in L302N for 1991.

| Depth | 7/24/91 | 8/20/91 | 9/3/91 | 9/17/91 | 10/29/91 | 12/10/91 |
|---|---|---|---|---|---|---|
| 1 | 52 | 34 | 33 | 32 | 48 | 46 |
| 4 | | | 44 | | 45 | 46 |
| 6 | | | 38 | | 48 | 44 |
| 9 | | | 30* | | 48 | 54* |
| 11 | | | 27* | | 48 | 57* |
| 13 | | | 44 | | 47 | 66* |

Appendix E2.2 Concentrations of Cu in L302N for 1991.

| Depth | 7/24/91 | 8/20/91 | 9/3/91 | 9/17/91 | 10/29/91 | 12/10/91 |
|---|---|---|---|---|---|---|
| 1 | 0 | 0.2 | 0.2 | 0 | 0 | 0.3 |
| 4 | | | 0 | | 0 | 0.2 |
| 6 | | | 0 | | 0 | 0 |
| 9 | | | 0 | | 0 | 0 |
| 11 | | | 0 | | 0.7 | 0.4 |
| 13 | | | 0 | | 0 | 0.9 |

Appendix E2.3 Concentrations of Fe in L302N for 1991.

| Depth | 7/24/91 | 8/20/91 | 9/3/91 | 9/17/91 | 10/29/91 | 12/10/91 |
|---|---|---|---|---|---|---|
| 1 | 105 | 89 | 115 | 145 | 200 | 195 |
| 4 | | | 113 | | 206 | 201 |
| 6 | | | 94 | | 216 | 231 |
| 9 | | | 753 | | 208 | 516 |
| 11 | | | 1481 | | 208 | 1180 |
| 13 | | | 4118 | | 211 | 1796 |

Appendix E2.4 Concentrations of Mn in L302N for 1991.

| Depth | 7/24/91 | 8/20/91 | 9/3/91 | 9/17/91 | 10/29/91 | 12/10/91 |
|---|---|---|---|---|---|---|
| 1 | 144 | 131 | 116 | 116 | 131 | 137 |
| 4 | | | 131 | | 131 | 142 |
| 6 | | | 116 | | 131 | 147 |
| 9 | | | 214 | | 131 | 178 |
| 11 | | | 240 | | 132 | 183 |
| 13 | | | 251 | | 118 | 208 |

Appendix E2.5 Concentrations of Zn in L302N for 1991.

| Depth | 7/24/91 | 8/20/91 | 9/3/91 | 9/17/91 | 10/29/91 | 12/10/91 |
|---|---|---|---|---|---|---|
| 1 | 0.9 | 2.6 | 0.7 | 0.3 | 0.7 | 0.5 |
| 4 | | | 0.2 | | 1 | 1.4 |
| 6 | | | 2.7 | | 0.5 | 1.1 |
| 9 | | | 1 | | 0.5 | 0.9 |
| 11 | | | 0.2 | | 0.7 | 0.9 |
| 13 | | | 0.9 | | 1.5 | 0.2 |

Appendix E3.1 Concentrations of Al in L302S for 1991.

| Depth | 2/13/91 | 5/17/91 | 5/23/91 | 5/24/91 | 5/25/91 | 5/26/91 | 5/30/91 | 6/5/91 | 6/12/91 | 6/27/91 | 7/14/91 | 7/24/91 | 7/31/91 | 8/7/91 | 8/12/91 | 8/20/91 | 8/26/91 | 9/3/91 | 9/9/91 | 9/17/91 | 9/23/91 | 10/1/91 | 10/7/91 | 10/29/91 | 12/10/91 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 89 | 96 | 93 | | | | 55 | 91 | 88 | 93 | 89 | 83 | 78 | 71 | 74 | 72 | 59 | 90 | 58 | 66 | 75 | 70 | 84 | 103 | 121* |
| 4 | 83 | | 102 | | | | | 104 | | | 86 | | | 79 | | | | 70 | | | | 84 | | 103 | 112 |
| 6 | 88 | | | 96 | | | | 118 | | | 71 | | | 76 | | | | 70 | | | | 89 | | 104 | 116 |
| 8 | 45 | | | | 95 | | | 91 | | | 81 | | | 36 | | | | 70 | | | | 81 | | 97 | 78 |
| 10 | 89 | | | | | 92 | | 81 | | | 78 | | | | | | | 89 | | | | 1 | | 100 | 183* |

Appendix E3.2 Concentrations of Cu in L302S for 1991.

| Depth | 2/13/91 | 5/17/91 | 5/23/91 | 5/24/91 | 5/25/91 | 5/26/91 | 5/30/91 | 6/5/91 | 6/12/91 | 6/27/91 | 7/14/91 | 7/24/91 | 7/31/91 | 8/7/91 | 8/12/91 | 8/20/91 | 8/26/91 | 9/3/91 | 9/9/91 | 9/17/91 | 9/23/91 | 10/1/91 | 10/7/91 | 10/29/91 | 12/10/91 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.3 | 1 | 0 | | | | 0 | 0 | 0.2 | 0 | 0.4 | 0 | 0 | 0 | 0.5 | 0.3 | 0 | 0.4 | 0 | 0.3 | 0 | 0 | 0.6 | 0 | 0 |
| 4 | 0 | | 0.3 | | | | | 0 | | | 0 | | | 0 | | | | 0.4* | | | | 0 | | 0 | 0 |
| 6 | 0 | | | 0 | | | | 0 | | | 0 | | | 0.5 | | | | 0 | | | | 0.8* | | 0 | 0 |
| 8 | 0 | | | | 0 | | | 0 | | | 0 | | | 0.3 | | | | 0 | | | | 0.7 | | 0 | 0.5 |
| 10 | 0.4 | | | | | 0 | | 0 | | | 0 | | | | | | | 0 | | | | 0 | | 0 | 0.8 |

Appendix E3.3 Concentrations of Fe in L302S for 1991.

| Depth | 2/13/91 | 5/17/91 | 5/23/91 | 5/24/91 | 5/25/91 | 5/26/91 | 5/30/91 | 6/5/91 | 6/12/91 | 6/27/91 | 7/14/91 | 7/24/91 | 7/31/91 | 8/7/91 | 8/12/91 | 8/20/91 | 8/26/91 | 9/3/91 | 9/9/91 | 9/17/91 | 9/23/91 | 10/1/91 | 10/7/91 | 10/29/91 | 12/10/91 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 333 | 177 | 278 | | | | 83* | 205 | 189 | 176 | 183 | 181 | 182 | 207 | 189 | 220 | 236 | 241 | 267 | 317 | 318 | 295 | 248 | 199 | 200 |
| 4 | 315 | | 302 | | | | | 232 | | | 181 | | | 214 | | | | 207 | | | | 309 | | 179 | 195 |
| 6 | 436 | | | 290 | | | | 232 | | | 378 | | | 255 | | | | 267 | | | | 327 | | 188 | 298 |
| 8 | 7158* | | | | 685 | | | 579 | | | 922 | | | 1552 | | | | 334 | | | | 282 | | 197 | 2764 |
| 10 | 11564 | | | | | 740 | | 2267 | | | 5718 | | | | | | | 8554 | | | | 99095* | | 183 | 15758 |

Appendix E3.4 Concentrations of Mn in L302S for 1991.

| Depth | 2/13/91 | 5/17/91 | 5/23/91 | 5/24/91 | 5/25/91 | 5/26/91 | 5/30/91 | 6/5/91 | 6/12/91 | 6/27/91 | 7/14/91 | 7/24/91 | 7/31/91 | 8/7/91 | 8/12/91 | 8/20/91 | 8/26/91 | 9/3/91 | 9/9/91 | 9/17/91 | 9/23/91 | 10/1/91 | 10/7/91 | 10/29/91 | 12/10/91 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 516 | 455 | 463 | | | | 152* | 480 | 452 | 480 | 445 | 442 | 442 | 454 | 448 | 445 | 450 | 480 | 433 | 448 | 415 | 440 | 444 | 419 | 452 |
| 4 | 517* | | 458 | | | | | 452 | | | 450 | | | 453 | | | | 480 | | | | 398* | | 457 | 467 |
| 6 | 486* | | | 456 | | | | 457 | | | 438 | | | 453 | | | | 459 | | | | 445 | | 457 | 467 |
| 8 | 461 | | | | 452 | | | 451 | | | 405 | | | 447 | | | | 456 | | | | 441 | | 457 | 397 |
| 10 | 436 | | | | | 451 | | 429 | | | 466 | | | | | | | 587 | | | | 0.5* | | 437 | 397 |

Appendix E3.5 Concentrations of Zn in L302S for 1991.

| Depth | 2/13/91 | 5/17/91 | 5/23/91 | 5/24/91 | 5/25/91 | 5/26/91 | 5/30/91 | 6/5/91 | 6/12/91 | 6/27/91 | 7/14/91 | 7/24/91 | 7/31/91 | 8/7/91 | 8/12/91 | 8/20/91 | 8/26/91 | 9/3/91 | 9/9/91 | 9/17/91 | 9/23/91 | 10/1/91 | 10/7/91 | 10/29/91 | 12/10/91 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.3* | 0.8 | 5.5 | | | | 3.1 | 3.9 | 3.8 | 0.4 | 3.7 | 1 | 1.9 | 3.7 | 3.5 | 3.4 | 3.5 | 3.2 | 0.8 | 2.8 | 1.7 | 1.8 | 4.3 | 5.5 | 1.7 |
| 4 | 6.1 | | 5.2 | | | | | 4 | | | 3.4 | | | 3.7 | | | | 1.2 | | | | 1.5 | | 5.7 | 1.8 |
| 6 | 5.8 | | | 4.4 | | | | 4.8 | | | 4.4 | | | 3.8 | | | | 3.1 | | | | 5.4 | | 5.6 | 2.3 |
| 8 | 1.7 | | | | 4.3 | | | 3.8 | | | 2.2 | | | 5.1 | | | | 3.2 | | | | 0.7 | | 5.2 | 1.5 |
| 10 | 1.2 | | | | | 3.8 | | 4.5 | | | 1.1 | | | | | | | 2.8 | | | | 0.2 | | 1.9 | 0.5 |

Appendix F1.1 Concentrations of Al in L223 for 1992.

| Depth | 5/27/92 | 6/3/92 | 6/29/92 | 7/29/92 | 8/25/92 | 9/21/92 | 10/7/92 | 10/20/92 |
|---|---|---|---|---|---|---|---|---|
| 1 | 58 | 50 | 35 | 38 | 21 | 33 | 30 | 31 |
| 4 | 57* | 41 | 29 | 37 | 22 | 33 | | 30 |
| 8 | 53 | 40 | 30 | 39 | 30 | 32 | | 27 |
| 10 | 47 | 0.6 | 34 | 38 | 29 | 3 | | 28 |
| 12 | 54 | 46 | 34 | 51 | 56 | 74 | | 29 |
| 14 | 123 | 47 | 70 | 57 | 71 | 84 | | |
| IF | | | 61 | | | 154 | | 46 |

Appendix F1.2 Concentrations of Cu in L223 for 1992.

| Depth | 5/27/92 | 6/3/92 | 6/29/92 | 7/29/92 | 8/25/92 | 9/21/92 | 10/7/92 | 10/20/92 |
|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0.4 | 1.6 | 0.8 | 0.3 | 0.8 | 0.3 | 0.5 |
| 4 | 0 | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | | 0.4 |
| 8 | 0 | 0 | 0.2 | 0.2 | 0.2 | 0.2 | | 0.5 |
| 10 | 0 | 0 | 0.7 | 1.2 | 0.2 | 0.2 | | 0.3 |
| 12 | 0 | 0.4 | 0.2 | 0.4 | 0.3 | 0.3 | | 0.3 |
| 14 | 0.3 | 0.2 | 0.5 | 0.5 | 0.3 | 0.3 | | 0.6 |
| IF | | | 0.6 | | | 0.4 | | 0.7 |

Appendix F1.3 Concentrations of Fe in L223 for 1992.

| Depth | 5/27/92 | 6/3/92 | 6/29/92 | 7/29/92 | 8/25/92 | 9/21/92 | 10/7/92 | 10/20/92 |
|---|---|---|---|---|---|---|---|---|
| 1 | 148 | 115 | 50 | 24 | 21 | 31 | 80 | 125 |
| 4 | 198 | 141 | 48 | 23 | 20 | 32 | | 121 |
| 8 | 273 | 268 | 89 | 100 | 206 | 98 | | 126 |
| 10 | 329 | 0 | 86 | 625 | 677 | 0 | | 128 |
| 12 | 408 | 495 | 1098 | 2795 | 3809 | 3811 | | 130 |
| 14 | 478 | 842 | 5849 | 4148 | 511 | 5549 | | 212 |
| IF | | | 194 | | | 488 | | 86 |

Appendix F1.4 Concentrations of Mn in L223 for 1992.

| Depth | 5/27/92 | 6/3/92 | 6/29/92 | 7/29/92 | 8/25/92 | 9/21/92 | 10/7/92 | 10/20/92 |
|---|---|---|---|---|---|---|---|---|
| 1 | 35 | 33 | 35 | 8 | 8 | 13 | 28 | 47 |
| 4 | 42 | 36 | 29 | 8 | 8 | 13 | | 45 |
| 8 | 48 | 50 | 67 | 89 | 117* | 80 | | 48 |
| 10 | 51 | 0 | 88 | 158 | 252* | 0.7 | | 47 |
| 12 | 60 | 66 | 116 | 281 | 351 | 423 | | 47 |
| 14 | 64 | 71 | 251 | 257 | 371 | 438 | | 50 |
| IF | | | 7 | | | 22 | | 4 |

Appendix F1.5 Concentrations of Zn in L223 for 1992.

| Depth | 5/27/92 | 6/3/92 | 6/29/92 | 7/29/92 | 8/25/92 | 9/21/92 | 10/7/92 | 10/20/92 |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.6 | 2.9 | 3.9 | 2.4 | 0.8 | 0 | 0.2 | 0.7 |
| 4 | 0.6 | 3.2 | 0.9 | 1.1 | 4.8 | 0.5 | | 0 |
| 8 | 0.6 | 0.6 | 1.1 | 1.5 | 1.4 | 0.8 | | 0 |
| 10 | 0.5 | 0 | 1.3 | 4.7* | 1.1 | 0 | | 0 |
| 12 | 0.7 | 0.7 | 1.3 | 1.8 | 3.2* | 0 | | 0 |
| 14 | 1.3 | 0.8 | 1.5 | 1.8 | 1.7 | 0.8 | | 0.7 |
| IF | | | 2.4 | | | 2.7 | | 1.1 |

Appendix F2.1 Concentrations of Al in L302N for 1992.

| Depth | 2/10/92 | 3/18/92 | 5/27/92 | 6/3/92 | 6/10/92 | 7/7/92 | 7/21/92 | 8/5/92 | 8/18/92 | 9/1/92 | 9/15/92 | 9/30/92 | 10/27/92 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 46 | 117 | 1.1 | 61 | 89 | 106 | 89 | 74 | 0.7 | 113 | 80 | 78 |
| 4 | | 52 | | | 69 | 22 | | 84 | | 27 | | 82 | 84 |
| 6 | | 48 | | | 60 | 31 | | 50 | | 1.2 | | 82 | 82 |
| 9 | | 48 | | | 53 | 51 | | 53 | | 4.7 | | 52 | 85 |
| 11 | | 76 | | | 53 | 40 | | 42 | | 1.3 | | 80 | 80 |
| 13 | 0 | 141 | | | 67 | 44 | | 126 | | 10 | | 95 | 79 |

Appendix F2.2 Concentrations of Cu in L302N for 1992.

| Depth | 2/10/92 | 3/18/92 | 5/27/92 | 6/3/92 | 6/10/92 | 7/7/92 | 7/21/92 | 8/5/92 | 8/18/92 | 9/1/92 | 9/15/92 | 9/30/92 | 10/27/92 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0 | 0 | 0 | 0.3 | 0.4 | 0.2 | 0.5 | 0.7 | 0.2 | 0.2 | 0.3 | 0.4 |
| 4 | | 0.7 | | | 0.3 | 0.2 | | 0.2 | | 0 | | 0.4 | 0 |
| 6 | | 0.6 | | | 0 | 0.2 | | 0.6 | | 0.5 | | 0.3 | 0.3 |
| 9 | | 0.4 | | | 0 | 0.3 | | 0.6 | | 0 | | 0.3 | 0.2 |
| 11 | | 0.3 | | | 0* | 0.4 | | 0.4 | | 0.2 | | 0.4 | 0.2 |
| 13 | 0 | 1 | | | 0.3 | 0.4 | | 0.4 | | 0.2 | | 0.4 | 0.5 |

Appendix F2.3 Concentrations of Fe in L302N for 1992.

| Depth | 2/10/92 | 3/18/92 | 5/27/92 | 6/3/92 | 6/10/92 | 7/7/92 | 7/21/92 | 8/5/92 | 8/18/92 | 9/1/92 | 9/15/92 | 9/30/92 | 10/27/92 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 101 | 188 | 0 | 177 | 137 | 102 | 101 | 108 | 0 | 160 | 232 | 382* |
| 4 | | 121 | | | 177 | 122 | | 123 | | 0 | | 197 | 395* |
| 6 | | 143 | | | 185 | 199 | | 250 | | 0 | | 212 | 390 |
| 9 | | 628 | | | 486 | 845 | | 1812* | | 0 | | 605 | 427 |
| 11 | | 2539 | | | 757 | 2300 | | 2426 | | 10 | | 3520 | 403 |
| 13 | 0 | 7872 | | | 1680 | 2685 | | 2441 | | 9 | | 3719 | 389 |

Appendix F2.4 Concentrations of Mn in L302N for 1992.

| Depth | 2/10/92 | 3/18/92 | 5/27/92 | 6/3/92 | 6/10/92 | 7/7/92 | 7/21/92 | 8/5/92 | 8/18/92 | 9/1/92 | 9/15/92 | 9/30/92 | 10/27/92 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 144 | 176 | 0* | 173 | 158 | 165 | 174 | 176 | 0.8* | 194 | 200 | 194 |
| 4 | | 164 | | | 164 | 158 | | 177 | | 1.6* | | 192 | 183 |
| 6 | | 170 | | | 174 | 187 | | 210 | | 1* | | 189 | 184 |
| 9 | | 198 | | | 180 | 205 | | 228 | | 0* | | 225 | 183 |
| 11 | | 195 | | | 183 | 197 | | 220 | | 3.5* | | 263 | 183 |
| 13 | 0 | 272 | | | 226 | 220 | | 215 | | 1.9 | | 256 | 178 |

Appendix F2.5 Concentrations of Zn in L302N for 1992.

| Depth | 2/10/92 | 3/18/92 | 5/27/92 | 6/3/92 | 6/10/92 | 7/7/92 | 7/21/92 | 8/5/92 | 8/18/92 | 9/1/92 | 9/15/92 | 9/30/92 | 10/27/92 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 2.1 | 3 | 0 | 3.7 | 3.9 | 6.2 | 4.7 | 8.4 | 0 | 7.7 | 3.8 | 4 |
| 4 | | 2.7 | | | 4.1 | 4 | | 3.8 | | 0.3* | | 3.7 | 3.4 |
| 6 | | 4.4 | | | 3.8 | 4.3 | | 5 | | 0* | | 3.3 | 4.7 |
| 9 | | 2.5 | | | 3.4 | 2.9 | | 3.2 | | 0* | | 2.1 | 2.8 |
| 11 | | 1.8 | | | 3 | 3 | | 2.4 | | 0 | | 1.3 | 0.3 |
| 13 | 0 | 1.3 | | | 2.9 | 2.3 | | 2.5 | | 0 | | 0 | 0.2 |

Appendix F3.1 Concentrations of Al in L302S for 1992.

| Depth | 2/10/92 | 3/15/92 | 5/27/92 | 6/3/92 | 6/10/92 | 7/7/92 | 7/13/92 | 7/21/92 | 8/5/92 | 8/10/92 | 8/18/92 | 8/25/92 | 9/1/92 | 9/15/92 | 9/21/92 | 9/30/92 | 10/7/92 | 10/27/92 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0* | 125 | 138 | 103 | 134 | 28 | 145 | 142 | 103 | 22 | 106 | 105 | 178 | 101 | 104 | 112 | 107 | 102 |
| 4 | 0.7 | 107 | | | 87 | 141 | | | 111 | | | | 2 | | | 144 | | 100 |
| 6 | 1.6 | 83 | | | 93 | 31 | | | | | | | 248 | | | 94 | | 98 |
| 8 | 0 | 118 | | | 104 | 159 | | | 141 | | | | 249 | | | 95 | | |
| 10 | 0.7 | 500* | | | 244 | 31 | | | 13 | | | | 238 | | | 144 | | 81 |

Appendix F3.2 Concentrations of Cu in L302S for 1992.

| Depth | 2/10/92 | 3/18/92 | 5/27/92 | 6/3/92 | 6/10/92 | 7/7/92 | 7/13/92 | 7/21/92 | 8/5/92 | 8/10/92 | 8/18/92 | 8/25/92 | 9/1/92 | 9/15/92 | 9/21/92 | 9/30/92 | 10/7/92 | 10/27/92 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0.4 | 0 | 0 | 0.2 | 0.3 | 0 | 0.2 | 0.5 | 0.3 | 0.2 | 0.2 | 0.3 | 0 | 1.2* | 0.2 | 0.5 |
| 4 | 0.4 | 0 | | | 0 | 0.2 | | | 0.2 | | | | 0 | | | 0.5 | | 0.2 |
| 6 | 0 | 0 | | | 0 | 1* | | | | | | | 0.2 | | | 0.2 | | 0.3 |
| 8 | 0 | 0.3 | | | 0 | 0.2 | | | 0.4 | | | | 0.3 | | | 0.2 | | |
| 10 | 0 | 0.9 | | | 0.5 | 0.2 | | | 0.5 | | | | 0.2 | | | 0.4 | | 0.4 |

Appendix F3.3 Concentrations of Fe in L302S for 1992.

| Depth | 3/10/92 | 3/18/92 | 5/27/92 | 6/3/92 | 6/10/92 | 7/7/92 | 7/13/92 | 7/21/92 | 8/5/92 | 8/10/92 | 8/18/92 | 8/26/92 | 9/1/92 | 9/15/92 | 9/21/92 | 9/30/92 | 10/7/92 | 10/27/92 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 182 | 344 | 272 | 202 | 468 | 171 | 179 | 173 | 175 | 182 | 235 | 300 | 389 | 395 | 700 | 611 | 583 |
| 4 | 0 | 165 | | | 267 | 201 | | | 182 | | | | 0 | | | 644 | | 587 |
| 6 | 0* | 405 | | | 738 | 663 | | | | | | | 585 | | | 574 | | 585 |
| 8 | 0 | 9136 | | | 5398 | 7378 | | | 8074 | | | | 8678 | | | 507 | | |
| 10 | 0 | 13552 | | | 15195 | 8672 | | | 6290 | | | | 9350 | | | 8452 | | 800 |

Appendix F3.4 Concentrations of Mn in L302S for 1992.

| Depth | 3/10/92 | 3/18/92 | 5/27/92 | 6/3/92 | 6/10/92 | 7/7/92 | 7/13/92 | 7/21/92 | 8/5/92 | 8/10/92 | 8/18/92 | 8/26/92 | 9/1/92 | 9/15/92 | 9/21/92 | 9/30/92 | 10/7/92 | 10/27/92 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0* | 493 | 393 | 327 | 391 | 315 | 360 | 356 | 352 | 347 | 351 | 348 | 343 | 325 | 322 | 316 | 317 | 301 |
| 4 | 0* | 488 | | | 396 | 328 | | | 352 | | | | 0.5* | | | 297 | | 308 |
| 6 | 0* | 489 | | | 368 | 368 | | | | | | | 347 | | | 317 | | 311 |
| 8 | 0* | 482 | | | 478 | 553 | | | 539 | | | | 541 | | | 314 | | |
| 10 | 0* | 439 | | | 437 | 535 | | | 548 | | | | 543 | | | 837 | | 298 |

Appendix F3.5 Concentrations of Zn in L302S for 1992.

| Depth | 3/10/92 | 3/18/92 | 5/27/92 | 6/3/92 | 6/10/92 | 7/7/92 | 7/13/92 | 7/21/92 | 8/5/92 | 8/10/92 | 8/18/92 | 8/26/92 | 9/1/92 | 9/15/92 | 9/21/92 | 9/30/92 | 10/7/92 | 10/27/92 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 8.1 | 4.9 | 5.1 | 4.8 | 6.6 | 8.1 | 5.4 | 5.7 | 7.2 | 7.1 | 8.8 | 4.8 | 4 | 3.6 | 8 | 0.2 | 1.4 |
| 4 | 0 | 11.1 | | | 5 | 7 | | | 4.8 | | | | 0 | | | 3.8 | | 4 |
| 6 | 0 | 5.1 | | | 4.8 | 6.8 | | | | | | | 3.8 | | | 4 | | 4.5 |
| 8 | 0 | 2.8 | | | 2.8 | 0 | | | 3.2 | | | | 1.5 | | | 3.7 | | |
| 10 | 0 | 4.3 | | | 0.2 | 2.2 | | | 4.8 | | | | 0.2 | | | 3.1 | | 5.8 |

Appendix G1.1 Concentrations of Al in L223 for 1993.

| Depth | 1/12/93 | 3/24/93 | 5/3/93 | 5/17/93 | 5/31/93 | 6/14/93 | 6/28/93 | 7/12/93 | 7/26/93 | 8/9/93 | 8/23/93 | 9/23/93 | 10/25/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14 | 14 | 25 | 70* | 25 | 23 | 21 | 17 | 4 | 5 | 28 | 13 | 4 |
| 4 | 14 | 14 | 26 | | 23 | | 2 | | 5 | | 26 | 4 | 8 |
| 8 | 19 | 22 | 22 | | 23 | | 4 | | 6 | | 28 | 4 | 3 |
| 10 | 22 | 23 | 30 | | 24 | | 5 | | 7 | | 42 | 5 | 8 |
| 12 | 24 | 72 | 26 | | 25 | | 18 | | 7 | | 63 | 18 | 4 |
| 14 | 35 | 203* | 28 | | 21 | | 7 | | 21 | | 38 | 66* | 19 |
| IF | | | | | | | | | | | | 102 | |

Appendix G1.2 Concentrations of Cu in L223 for 1993.

| Depth | 1/12/93 | 3/24/93 | 5/3/93 | 5/17/93 | 5/31/93 | 6/14/93 | 6/28/93 | 7/12/93 | 7/26/93 | 8/9/93 | 8/23/93 | 9/23/93 | 10/25/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0.4 | 0.7 | 5.7* | 1.5 | 1.2 | 0.4 | 0 | 0.3 | 0.5 | 0.3 | 0.4 |
| 4 | 0 | 0 | 0.8 | | 0 | | 0.8 | | 0 | | 0.2 | 0.7 | 0.6 |
| 8 | 0 | 0 | 0 | | 0 | | 0.5 | | 0 | | 0.2 | 0.3 | 0.3 |
| 10 | 0 | 0 | 0 | | 0 | | 0.6 | | 0 | | 1.7* | 0.2 | 0.2 |
| 12 | 0 | 0.4 | 0.3 | | 0 | | 0.7 | | 0.3 | | 0.5 | 0.4 | 0.2 |
| 14 | 0.8 | 0.3 | 0 | | 0 | | 0.7 | | 0 | | 0.3 | 0.5 | 0.4 |
| IF | | | | | | | | | | | | 0.3 | |

Appendix G1.3 Concentrations of Fe in L223 for 1993.

| Depth | 1/12/93 | 3/24/93 | 5/3/93 | 5/17/93 | 5/31/93 | 6/14/93 | 6/28/93 | 7/12/93 | 7/26/93 | 8/9/93 | 8/23/93 | 9/23/93 | 10/25/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 21 | 17 | 123* | 84 | 32 | 15 | 19 | 17 | 83 | 17 | 21 | 47 | 70 |
| 4 | 33 | 17 | 118* | | 33 | | 17 | | 51 | | 31 | 42 | 66 |
| 8 | 44 | 79 | 114 | | 75 | | 20 | | 80 | | 31 | 66 | 77 |
| 10 | 138 | 488 | 117 | | 80 | | 31 | | 178 | | 757* | 102 | 78 |
| 12 | 700 | 5620* | 123 | | 151 | | 49 | | 830 | | 3010 | 3790 | 73 |
| 14 | 3130 | 22350* | 129 | | 211 | | 158 | | 4170 | | 5980 | 7280 | 156 |
| IF | | | | | | | | | | | | 286 | |

Appendix G1.4 Concentrations of Mn in L223 for 1993.

| Depth | 1/12/93 | 3/24/93 | 5/3/93 | 5/17/93 | 5/31/93 | 6/14/93 | 6/28/93 | 7/12/93 | 7/26/93 | 8/9/93 | 8/23/93 | 9/23/93 | 10/25/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 27 | 29 | 29 | 30 | 23 | 22 | 23 | 20 | 20 | 16 | 11* | 16 | 29 |
| 4 | 25 | 24 | 27 | | 25 | | 24 | | 21 | | 19 | 20 | 29 |
| 8 | 27 | 36 | 25 | | 29 | | 24 | | 35 | | 25 | 21 | 29 |
| 10 | 62 | 107 | 25 | | 33 | | 36 | | 83 | | 351* | 33 | 30 |
| 12 | 152 | 207 | 26 | | 45 | | 52 | | 157 | | 330 | 437* | 30 |
| 14 | 206 | 480 | 25 | | 62 | | 90 | | 300 | | 380 | 460 | 33 |
| IF | | | | | | | | | | | | 13 | |

Appendix G1.5 Concentrations of Zn in L223 for 1993.

| Depth | 1/12/93 | 3/24/93 | 5/3/93 | 5/17/93 | 5/31/93 | 6/14/93 | 6/28/93 | 7/12/93 | 7/26/93 | 8/9/93 | 8/23/93 | 9/23/93 | 10/25/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 5.5* | 0 | 0.8 | 0 | 0 | 3.2 | 1.2 | 2 | 1 | 2.1 |
| 4 | 0 | 0 | 0.5 | | 0 | | 1.2 | | 2.2* | | 0.5 | 0.7 | 0.3 |
| 8 | 0 | 0 | 0 | | 0 | | 0 | | 2.6* | | 0.6 | 0.3 | 0.3 |
| 10 | 0 | 0 | 0 | | 0 | | 0 | | 2.2* | | 1.3 | 0.5 | 0.3 |
| 12 | 0 | 0 | 0 | | 0 | | 0 | | 2.8 | | 2.4 | 0.3 | 0.3 |
| 14 | 0 | 1.9 | 4.4* | | 0 | | 0.9 | | 2.7 | | 1.9 | 0.6 | 1.1 |

Appendix G2.1 Concentrations of Al in L302N for 1993.

| Depth | 1/12/93 | 3/24/93 | 5/11/93 | 5/17/93 | 5/25/93 | 5/31/93 | 6/8/93 | 7/8/93 | 7/14/93 | 7/29/93 | 7/22/93 | 7/28/93 | 7/28/93 | 8/3/93 | 8/9/93 | 8/17/93 | 8/23/93 | 9/1/93 | 9/9/93 | 9/15/93 | 9/22/93 | 9/28/93 | 10/18/93 | 10/28/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 61 | 79 | 71 | 70 | 73 | 66 | 63 | 57 | 52 | 16 | 51 | 57 | 20 | 76 | 20 | 103 | 97 | | 20 | 96 | 91 | 15 | 24 | 42 |
| 4 | 70 | 73 | 73 | | | | 65 | 26 | | | | 106 | | 16 | | | | 106 | | | | 14 | | 18 |
| 6 | 66 | 67 | 84 | | | | 52 | 51 | | | | | | 12 | | | | 67 | | | | 46 | | 30 |
| 9 | 67 | 73 | 63 | | | | 56 | 15 | | | | | | 61 | | | | 44 | | | | 52 | | 22 |
| 11 | 65 | 90 | 70 | | | | 10* | 63 | | | | | | 75 | | | | 89 | | | | 64 | | 30 |
| 13 | 206 | 260* | 72 | | | | 72 | 70 | | | | | | 28 | | | | 37 | | | | 62 | | 18 |

Appendix G2.2 Concentrations of Cu in L302N for 1993

| Depth | 1/12/93 | 3/24/93 | 5/11/93 | 5/17/93 | 5/25/93 | 5/31/93 | 6/8/93 | 7/6/93 | 7/14/93 | 7/20/93 | 7/22/93 | 7/26/93 | 7/28/93 | 8/3/93 | 8/9/93 | 8/17/93 | 8/23/93 | 9/1/93 | 9/9/93 | 9/15/93 | 9/22/93 | 9/28/93 | 10/16/93 | 10/28/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.7 | 0 | 0 | 0 | 0 | 1.9" | 0.8 | 0.3 | 0.3 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0.3 | 1.5" | | 0 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| 4 | 0.7 | 0 | 0 | | | | 0.5 | 0 | | | | 0.2 | | 0 | | | | 0.7 | | | | 0.5 | | 0.4 |
| 6 | 0.5 | 0.4 | 0 | | | | 0 | 0.3 | | | | | | 0 | | | | 0.2 | | | | 2.1" | | 0.4 |
| 9 | 0 | 0 | 0 | | | | 0 | 0.7" | | | | | | 0 | | | | 0.2 | | | | 0.3 | | 0.3 |
| 11 | 0.3 | 0 | 0 | | | | 0.7 | 0 | | | | | | 0 | | | | 0.2 | | | | 0.3 | | 1" |
| 13 | 0.8 | 0.6 | 0 | | | | 0.3 | 0.3 | | | | | | 0 | | | | 0.5 | | | | 0.2 | | 0.8 |

Appendix G2.3 Concentrations of Fe in L302N for 1993

| Depth | 1/12/93 | 3/24/93 | 5/11/93 | 5/17/93 | 5/25/93 | 5/31/93 | 6/8/93 | 7/6/93 | 7/14/93 | 7/20/93 | 7/22/93 | 7/26/93 | 7/28/93 | 8/3/93 | 8/9/93 | 8/17/93 | 8/23/93 | 9/1/93 | 9/9/93 | 9/15/93 | 9/22/93 | 9/28/93 | 10/16/93 | 10/28/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 340 | 334 | 347 | 323 | 289 | 192 | 186 | 147 | 182 | 143 | 172 | 140 | 171 | 151 | 125 | 73 | 49 | | 59 | 138 | 144 | 175 | 373 | 314 |
| 4 | 337 | 334 | 349 | | | | 186 | 152 | | | | 61 | | 177 | | | | 88 | | | | 182 | | 310 |
| 6 | 367 | 383 | 466 | | | | 220 | 256 | | | | | | 298 | | | | 160 | | | | 164 | | 324 |
| 9 | 730 | 670 | 438 | | | | 890 | 700 | | | | | | 1130 | | | | 1849 | | | | 2940" | | 334 |
| 11 | 1470 | 2080 | 496 | | | | 1380 | 1730 | | | | | | 1980 | | | | 2539 | | | | 3100 | | 341 |
| 13 | 8570 | 12720" | 740 | | | | 1940 | 2420 | | | | | | 2210 | | | | 2780 | | | | 3180 | | 398 |

Appendix G2.4 Concentrations of Mn in L302N for 1993

| Depth | 1/12/93 | 3/24/93 | 5/11/93 | 5/17/93 | 5/25/93 | 5/31/93 | 6/8/93 | 7/6/93 | 7/14/93 | 7/20/93 | 7/22/93 | 7/26/93 | 7/28/93 | 8/3/93 | 8/9/93 | 8/17/93 | 8/23/93 | 9/1/93 | 9/9/93 | 9/15/93 | 9/22/93 | 9/28/93 | 10/16/93 | 10/28/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 157 | 159 | 161 | 162 | 160 | 165 | 161 | 158 | 163 | 161 | 161 | 165 | 161 | 165 | 163 | 162 | 174 | | 179 | 185" | 185" | 186" | 177 | 166 |
| 4 | 151 | 163 | 164 | | | | 166 | 159 | | | | 160 | | 162 | | | | 162 | | | | 166 | | 169 |
| 6 | 154 | 172 | 168 | | | | 168 | 171 | | | | | | 171 | | | | 164" | | | | 164 | | 166 |
| 9 | 168 | 175 | 166 | | | | 161 | 163 | | | | | | 213 | | | | 225 | | | | 235 | | 168 |
| 11 | 173 | 183 | 167 | | | | 167 | 183 | | | | | | 199 | | | | 215 | | | | 228 | | 171 |
| 13 | 243 | 416" | 171 | | | | 192 | 194 | | | | | | 199 | | | | 218 | | | | 229 | | 169 |

Appendix G2.5 Concentrations of Zn in L302N for 1993

| Depth | 1/12/93 | 3/24/93 | 5/11/93 | 5/17/93 | 5/25/93 | 5/31/93 | 6/8/93 | 7/6/93 | 7/14/93 | 7/20/93 | 7/22/93 | 7/26/93 | 7/28/93 | 8/3/93 | 8/9/93 | 8/17/93 | 8/23/93 | 9/1/93 | 9/9/93 | 9/15/93 | 9/22/93 | 9/28/93 | 10/16/93 | 10/28/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 1.7 | 2.8 | 3.4 | 1.9 | 2.2 | 0" | 0.9 | 2.3 | 1.8 | 0.8 | 2.7 | 1 | 1.8 | 2.6 | 4.1 | 3.9 | | 4.8 | 2.9 | 3.5 | 3.7 | 2.8 | 3.2 |
| 4 | 1.3 | 1.4 | 2.1 | | | | 2.6 | 0.6 | | | | 2.7 | | 6.7 | | | | 4.8 | | | | 6 | | 3.3 |
| 6 | 1.4 | 1.7 | 2.4 | | | | 1.5 | 0.5 | | | | | | 8.2" | | | | 2.4 | | | | 3.1 | | 4.8 |
| 9 | 0.8 | 1.8 | 1.7 | | | | 1.8 | 0.5 | | | | | | 4.2" | | | | 2.1 | | | | 2.4 | | 1.9 |
| 11 | 0.6 | 4.7 | 2.5 | | | | 2.7 | 0 | | | | | | 0.9 | | | | 1.7 | | | | 1.8 | | 5.6 |
| 13 | 0.6 | 1.2 | 2 | | | | 1.8 | 3.3 | | | | | | 2.1 | | | | 1.6 | | | | 0.9 | | 3.5 |

Appendix G3.1 Concentrations of Al in L302S for 1993

| Depth | 1/12/93 | 3/24/93 | 5/11/93 | 5/17/93 | 5/25/93 | 5/31/93 | 6/8/93 | 7/6/93 | 7/12/93 | 7/14/93 | 7/20/93 | 7/22/93 | 7/26/93 | 7/28/93 | 8/3/93 | 8/9/93 | 8/17/93 | 8/23/93 | 9/1/93 | 9/9/93 | 9/15/93 | 9/22/93 | 9/28/93 | 10/16/93 | 10/28/93 | 12/13/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 97 | 92 | 89 | 79 | 68 | 248" | 85 | 19 | 18 | 12 | 73 | 61 | 86 | 58 | 24 | 19 | 100 | 96 | 101 | 14 | 90 | 93 | 75 | 45 | 27 | 39 |
| 4 | 88 | 86 | 79 | | | | 85 | 70 | | | | | | | 16" | | | | 98 | | | | 75 | | 36 | 69 |
| 6 | 72 | 70 | 77 | | | | 71 | 12 | | | | | | | 11 | | | | 55 | | | | 56 | | 40 | 58 |
| 8 | 85 | 97 | 74 | | | | 157" | 12 | | | | | | | 9 | | | | 45 | | | | 20 | | 42 | 28 |
| 10 | 102 | 165" | 58 | | | | 52 | 24 | | | | | | | 58 | | | | 110 | | | | 48 | | 45 | 31 |

Appendix G3.2 Concentrations of Cu in L302S for 1993

| Depth | 1/12/93 | 3/24/93 | 5/11/93 | 5/17/93 | 5/25/93 | 5/31/93 | 6/8/93 | 7/6/93 | 7/12/93 | 7/14/93 | 7/20/93 | 7/22/93 | 7/26/93 | 7/28/93 | 8/3/93 | 8/9/93 | 8/17/93 | 8/23/93 | 9/1/93 | 9/9/93 | 9/15/93 | 9/22/93 | 9/28/93 | 10/16/93 | 10/28/93 | 12/13/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0.4 | 0 | 0.8 | 0 | 0.9 | 0.8 | 0.4 | 0.4 | 0 | 0 | 0.3 | 0.3 | 0 | 0.3 | 0 | 1.9 | 0.3 | 0.3 | 0 | 0.2 | 1.9 | 0.3 | 6.5" | 0.3 | 0.4 |
| 4 | 0.3 | 0.3 | 0 | | | | 0.5 | 0 | | | | | | | 0.2 | | | | 0 | | | | 0.2 | | 0.2 | 0 |
| 6 | 0 | 0 | 0 | | | | 0.8 | 0 | | | | | | | 0 | | | | 0.7 | | | | 0 | | 0.2 | 0.2 |
| 8 | 0 | 0.3 | 0 | | | | 0.3 | 0 | | | | | | | 0 | | | | 0.3 | | | | 0.3 | | 0.8" | 0.2 |
| 10 | 0 | 0.3 | 0 | | | | 0.4 | 0 | | | | | | | 0 | | | | 0.3 | | | | 0.3 | | 0.2 | 0.7" |

Appendix G3.3 Concentrations of Fe in L302S for 1993

| Depth | 1/12/93 | 3/24/93 | 5/11/93 | 5/17/93 | 5/25/93 | 5/31/93 | 6/8/93 | 7/6/93 | 7/12/93 | 7/14/93 | 7/20/93 | 7/22/93 | 7/26/93 | 7/28/93 | 8/3/93 | 8/9/93 | 8/17/93 | 8/23/93 | 9/1/93 | 9/9/93 | 9/15/93 | 9/22/93 | 9/28/93 | 10/16/93 | 10/28/93 | 12/13/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 482 | 428 | 580" | 523 | 413 | 365 | 330 | 225 | 215 | 306 | 197 | 275 | 191 | 243 | 166 | 166 | 148 | 144 | 165 | 243 | 396 | 378 | 402 | 339 | 304 | 266 |
| 4 | 493 | 465 | 580 | | | | 353 | 224 | | | | | | | 181 | | | | 143 | | | | 398 | | 303 | 277 |
| 6 | 630" | 700 | 630 | | | | 460 | 317 | | | | | | | 430 | | | | 406 | | | | 379 | | 303 | 525 |
| 8 | 2720 | 7410" | 640 | | | | 620 | 660 | | | | | | | 870 | | | | 1913 | | | | 390 | | 331 | 1368 |
| 10 | 6310 | 16270 | 690 | | | | 890 | 3200 | | | | | | | 6350 | | | | 13040 | | | | 400 | | 381 | 13660 |

Appendix G3.4 Concentrations of Mn in L302S for 1993

| Depth | 1/12/93 | 3/24/93 | 5/11/93 | 5/17/93 | 5/25/93 | 5/31/93 | 6/8/93 | 7/6/93 | 7/12/93 | 7/14/93 | 7/20/93 | 7/22/93 | 7/26/93 | 7/28/93 | 8/3/93 | 8/9/93 | 8/17/93 | 8/23/93 | 9/1/93 | 9/9/93 | 9/15/93 | 9/22/93 | 9/28/93 | 10/16/93 | 10/28/93 | 12/13/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 266 | 276 | 232 | 222 | 222 | 217 | 217 | 201 | 198 | 216 | 183 | 212 | 182 | 205 | 182 | 178 | 173 | 174 | 174 | 183 | 180 | 18" | 198 | 194 | 201 | 206 |
| 4 | 254 | 258 | 223 | | | | 221 | 198 | | | | | | | 181 | | | | 177 | | | | 185 | | 200 | 189 |
| 6 | 267 | 269 | 228 | | | | 264 | 253 | | | | | | | 290 | | | | 257 | | | | 187 | | 200 | 211 |
| 8 | 313 | 347 | 232 | | | | 321 | 283 | | | | | | | 306 | | | | 361 | | | | 184 | | 200 | 225 |
| 10 | 336 | 419 | 224 | | | | 329 | 357 | | | | | | | 381 | | | | 419 | | | | 187 | | 201 | 242 |

Appendix G3.5 Concentrations of Zn in L302S for 1993.

| Depth | 1/12/93 | 2/24/93 | 5/11/93 | 5/17/93 | 5/25/93 | 5/31/93 | 6/6/93 | 7/6/93 | 7/12/93 | 7/14/93 | 7/20/93 | 7/22/93 | 7/25/93 | 7/28/93 | 8/3/93 | 8/6/93 | 8/17/93 | 8/23/93 | 8/1/93 | 8/9/93 | 8/15/93 | 8/23/93 | 9/28/93 | 10/19/93 | 10/25/93 | 12/13/93 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3.4 | 2.4 | 2.9 | 2.4 | 2.5 | 2.1 | 2.8 | 2.6 | 2.3 | 2.6 | 3.3 | 4.4 | 3.5 | 2.7 | 2.8 | 0.6 | 3.9 | 1.9 | 3.3 | 2.3 | 3.4 | 6* | 2.7 | 6.1 | 4.8 | 6.2 |
| 4 | 2.7 | 2.3 | 1.8 | | | | 0.8 | 0.4 | | | | | | | 2.6 | | | | 3.8 | | | | 4.8 | | 5.6 | 5.4 |
| 6 | 1.8 | 1.8 | 1.4 | | | | 2.6 | 0.4 | | | | | | | 1.9 | | | | 1.8 | | | | 2.7 | | 4.7 | 5.5 |
| 8 | 7.1 | 1.2 | 1.5 | | | | 2 | 0 | | | | | | | 2.2 | | | | 5.9 | | | | 2.8 | | 6.2 | 6.3 |
| 10 | 0 | 0 | 2.1 | | | | 1.9 | 1.9 | | | | | | | 2.3 | | | | 3.2 | | | | 2.7 | | 4.3 | 2.4 |

Appendix H1.1 Concentrations of Al in L223 for 1994.

| Depth | 5/11/94 | 5/25/94 | 6/7/94 | 7/20/94 | 7/6/94 | 8/3/94 | 8/31/94 | 9/14/94 | 9/28/94 | 10/12/94 | 10/26/94 | 12/12/94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8 | 9 | 6 | 12 | 2 | 8 | 5 | 2 | 24* | 14 | 14 | 11 |
| 4 | 8 | | 5 | | 2 | 9 | 4 | | 21 | | 15 | 14 |
| 8 | 7 | | | | 4 | 8 | 6 | | 21 | | 14 | 16 |
| 10 | 9 | | 6 | | 6 | 11 | 10 | | 15 | | 17 | 24* |
| 12 | 11 | | | | 9 | 15 | 41 | | 39 | | 14 | 29 |
| 14 | 10 | | 12 | | 31 | 30 | 49 | | 61 | | 33 | 32 |
| IF | | | 288 | | | | | | | | | |

Appendix H1.2 Concentrations of Cu in L223 for 1994.

| Depth | 5/11/94 | 5/25/94 | 6/7/94 | 7/20/94 | 7/6/94 | 8/3/94 | 8/31/94 | 9/14/94 | 9/28/94 | 10/12/94 | 10/26/94 | 12/12/94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 1.1* | 0 | 0 | 0.5 | 0.5 | 0 | 0 | 0.7 | 0.2 | 0.5 | 0.4 | 0 |
| 4 | 0.2 | | 0 | | 0 | | 0 | 0 | | 0 | | 0.3 | 0 |
| 8 | 0.3 | | 0 | | 0.2 | | 0 | 0.2 | | 0 | | 0.3 | 0 |
| 10 | 0 | | 0 | | 0.9* | | 0 | 0 | | 0 | | 0.4* | 0 |
| 12 | 1* | | 0 | | 0 | | 0 | 0.3 | | 0 | | 0.3 | 0 |
| 14 | 0.2 | | 0 | | 0 | | 3.6* | 0.2 | | 0.2 | | 1.4* | 0 |
| IF | | | 0.6 | | | | | | | | | | |

Appendix H1.3 Concentrations of Fe in L223 for 1994.

| Depth | 5/11/94 | 5/25/94 | 6/7/94 | 7/20/94 | 7/6/94 | 8/17/94 | 8/3/94 | 8/31/94 | 9/14/94 | 9/28/94 | 10/12/94 | 10/26/94 | 12/12/94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 53 | 49 | | 54 | | 11 | | 43 | 27 | 130 | 211* | 129 | 53 |
| 4 | 21 | | | | | | | 0 | | 180 | | 53 | 25 |
| 8 | 56 | | | | 30 | | 81 | 180 | | 186 | | 101 | 94 |
| 10 | 25 | | 186 | | 100 | | 381 | 856 | | 1543* | | 67 | 87 |
| 12 | 21 | | | | 855 | | 1017 | 6138 | | 8240 | | 106 | 163 |
| 14 | 24 | | 178 | | 117 | | 3151 | 6710 | | 11026* | | 129 | 508 |
| IF | | | 1151 | | | | | | | | | | |

Appendix H1.4 Concentrations of Mn in L223 for 1994.

| Depth | 5/11/94 | 5/25/94 | 6/7/94 | 7/20/94 | 7/6/94 | 8/17/94 | 8/3/94 | 8/31/94 | 9/14/94 | 9/28/94 | 10/12/94 | 10/26/94 | 12/12/94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 26 | 21 | 14 | 6 | 7 | 10 | 7 | 6 | 7 | 10 | 36* | 31 | 8 |
| 4 | 26 | | 8 | | 6 | | 8 | 6 | | 11 | | 31 | 12 |
| 8 | 24 | | | | 25 | | 24 | 66* | | 10 | | 31 | 15 |
| 10 | 24 | | 33 | | 51 | | 100 | 184 | | 272* | | 32 | 12 |
| 12 | 29 | | | | 155 | | 234 | 374 | | 429 | | 32 | 36 |
| 14 | 30 | | 201 | | 252 | | 267 | 362 | | 443 | | 32 | 116 |
| IF | | | 23 | | | | | | | | | | |

Appendix H1.5 Concentrations of Zn in L223 for 1994.

| Depth | 5/11/94 | 5/25/94 | 6/7/94 | 7/20/94 | 7/6/94 | 8/17/94 | 8/3/94 | 8/31/94 | 9/14/94 | 9/28/94 | 10/12/94 | 10/26/94 | 12/12/94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.5 | 1.1 | 1.4 | 0.9 | 2 | 3.9 | 2.8 | 0.5 | 3.3 | 1.5 | 8.8 | 0.8 | 0.9 |
| 4 | 2 | | 0.8 | | 1 | | 1.1 | 0.9 | | 0.7 | | 0.6 | 0.8 |
| 8 | 2.9 | | 0 | | 0.8 | | 1.9 | 2.5 | | 0.6 | | 0.5 | 1 |
| 10 | 1.6 | | 0.9 | | 2.2 | | 1.9 | 2.2 | | 0.9 | | 0.8 | 0.9 |
| 12 | 5.4 | | 0 | | 1.5 | | 4.1 | 2.9 | | 0.8 | | 3.2 | 5.3 |
| 14 | 7.8 | | 1.8 | | 4.2 | | 5.6 | 1.7 | | 0.8 | | 3.9 | 1.2 |
| IF | | | 5.4 | | | | | | | | | | |

Appendix H2.1 Concentrations of Al in L226N for 1994.

| Depth | 12/12/94 |
|---|---|
| 1 | 26 |
| 4 | 27 |
| 7 | 29 |
| 10 | 27 |
| 13 | 29 |

Appendix H2.2 Concentrations of Fe in L226N for 1994.

| Depth | 12/12/94 |
|---|---|
| 1 | 25 |
| 4 | 32 |
| 7 | 25 |
| 10 | 90 |
| 13 | 115 |

Appendix H2.3 Concentrations of Mn in L226N for 1994.

| Depth | 12/12/94 |
|---|---|
| 1 | 9 |
| 4 | 14 |
| 7 | 16 |
| 10 | 13 |
| 13 | 19 |

Appendix H2.4 Concentrations of Zn in L226N for 1994.

| Depth | 12/12/94 |
|---|---|
| 1 | 1.1 |
| 4 | 2.7 |
| 7 | 0.6 |
| 10 | 0.7 |
| 13 | 2.7 |

Appendix H3.1 Concentrations of Al in L226S for 1994.

| Depth | 12/12/94 |
|---|---|
| 4 | 3 |
| 8 | 23 |
| 10 | 1 |
| 13 | 32 |

Appendix H3.2 Concentrations of Cu in L226S for 1994.

| Depth | 12/12/94 |
|---|---|
| 4 | 0 |
| 8 | 0 |
| 10 | 0 |
| 13 | 1.1 |

Appendix H3.3 Concentrations of Fe in L226S for 1994.

| Depth | 12/12/94 |
|---|---|
| 4 | 25 |
| 8 | 25 |
| 10 | 25 |
| 13 | 129 |

Appendix H3.4 Concentrations of Mn in L226S for 1994.

| Depth | 12/12/94 |
|---|---|
| 4 | 10 |
| 8 | 15 |
| 10 | 17 |
| 13 | 210 |

Appendix H3.5 Concentrations of Zn in L226S for 1994.

| Depth | 12/12/94 |
|---|---|
| 4 | 0.8 |
| 8 | 5.8 |
| 10 | 7 |
| 13 | 18.4 |

Appendix H4.1 Concentrations of Al in L302N for 1994.

| Depth | 5/11/94 | 5/24/94 | 6/21/94 | 6/7/94 | 7/25/94 | 7/4/94 | 8/2/94 | 8/31/94 | 9/14/94 | 9/27/94 | 10/11/94 | 10/25/94 | 12/13/94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 31 | 19 | 22 | 19 | 50 | 21 | 40 | 41 | 29 | 51 | 50 | 43 | 7 |
| 4 | 33 | | | 14 | | 21 | | 28 | | 47 | | 8 | 49 |
| 6 | 34 | | | 19 | | 17 | 22 | 32 | | 48 | | 42 | 90 |
| 9 | 31 | | | 21 | | 22 | 44 | | | 35 | | 5 | 53 |
| 11 | 33 | | | 17 | | 28 | 32 | 37 | | 37 | | 44 | 54 |
| 13 | 32 | | | 20 | | 31 | 30 | 49 | | 40 | | 48 | 112 |

Appendix H4.2 Concentrations of Cu in L302N for 1994.

| Depth | 5/11/94 | 5/18/94 | 5/24/94 | 6/21/94 | 6/7/94 | 7/25/94 | 7/4/94 | 8/11/94 | 8/2/94 | 8/31/94 | 9/14/94 | 9/27/94 | 10/11/94 | 10/25/94 | 12/13/94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0.8 | 0 | 0.3 | 0 | 0 | 0 | 0 | 0 | 0 | 1.2 | 0.3 | 1.7* |
| 4 | 0 | | | | 0 | | 0 | | 0 | 0 | | 0 | | 0.3* | 0 |
| 6 | 0 | | | | 0 | | 0 | | 0 | 0 | | 0 | | 0.3* | 0 |
| 9 | 0 | | | | 0 | | 0 | | 0 | 0 | | 0.4 | | 1.6* | 0 |
| 11 | 0.2 | | | | 0 | | 0 | | 0 | 0 | | 0 | | 0.3 | 0 |
| 13 | 0 | | | | 0.4 | | 0 | | 0 | 0 | | 0.2 | | 0 | 0.5 |

Appendix H4.3 Concentrations of Fe in L302N for 1994.

| Depth | 5/11/94 | 5/24/94 | 6/21/94 | 6/7/94 | 7/25/94 | 7/4/94 | 8/11/94 | 8/2/94 | 8/31/94 | 9/14/94 | 9/27/94 | 10/11/94 | 10/25/94 | 12/13/94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 87 | 14 | 0 | 17 | 125 | 125 | 140 | 6 | 84 | 198 | 190 | 191 | 218 | 198 |
| 4 | 150 | | | 6 | | 133 | | 83 | 59 | | 298 | | 273 | 143 |
| 6 | 254 | | | 9* | | 158 | | 198 | 213 | | 273 | | 260 | 218 |
| 9 | 69 | | | 11 | | 177 | | 1061 | 1325 | | 2133* | | 239 | 218 |
| 11 | 70 | | | 68 | | 105 | | 1615 | 1650 | | 2571 | | 246 | 336 |
| 13 | 70 | | | 214 | | 1572 | | 1917 | 1941 | | 2798 | | 404 | 1623 |

Appendix H4.4 Concentrations of Mn in L302N for 1994.

| Depth | 5/11/94 | 5/24/94 | 6/21/94 | 6/7/94 | 7/25/94 | 7/4/94 | 8/11/94 | 8/2/94 | 8/31/94 | 9/14/94 | 9/27/94 | 10/11/94 | 10/25/94 | 12/13/94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 140 | 125 | 111 | 112 | 100 | 110 | 89 | 90 | 84 | 81 | 95 | 104 | 102 | 80 |
| 4 | 142 | | | 115 | | 114 | | 101 | 85 | | 85 | | 101 | 78 |
| 6 | 150 | | | 151 | | 124 | | 141 | 149 | | 92 | | 103 | 80 |
| 9 | 157 | | | 176 | | 224 | | 269 | 275 | | 292 | | 105 | 88 |
| 11 | 158 | | | 197 | | 258 | | 283 | 284 | | 291 | | 103 | 96 |
| 13 | 165 | | | 219 | | 252 | | 284 | 283 | | 287 | | 111 | 149 |

Appendix H4.5 Concentrations of Zn in L302N for 1994.

| Depth | 5/11/94 | 5/18/94 | 5/24/94 | 6/7/94 | 6/21/94 | 7/4/94 | 7/25/94 | 8/2/94 | 8/11/94 | 8/31/94 | 9/14/94 | 9/27/94 | 10/11/94 | 10/25/94 | 12/13/94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.8 | 0.2 | 5.7 | 3.9 | 9* | 2 | 7.6 | 2.5 | 3.6 | 3.4 | 2.4 | 2.7 | 3.9 | 1.9 | 3.3 |
| 4 | 9.3 | | | 2.6 | | 2.2 | | 2.1 | | 3.7 | | 2.3 | | 2.3 | 2.2 |
| 6 | 2.6 | | | 2.6 | | 2.9 | | 2.7 | | 4 | | 2.2 | | 5.5* | 2.6 |
| 9 | 3.6 | | | 7.9 | | 2.7 | | 2.5 | | 2.4 | | 5.1 | | 2.3 | 6.6 |
| 11 | 3.9 | | | 2.7 | | 2.5 | | 11.2* | | 2.3 | | 2.8 | | 2.2 | 8.4 |
| 13 | 3 | | | 2.4 | | 3.4 | | 2.4 | | 6.1 | | 3.2 | | 4.3 | 5.9 |

Appendix H5.1 Concentrations of Al in L302S for 1994.

| Depth | 5/11/94 | 5/24/94 | 5/30/94 | 6/7/94 | 6/13/94 | 6/21/94 | 6/27/94 | 7/4/94 | 7/11/94 | 7/25/94 | 7/25/94 | 8/2/94 | 8/9/94 | 8/17/94 | 8/24/94 | 8/31/94 | 9/7/94 | 9/14/94 | 9/20/94 | 9/27/94 | 10/4/94 | 10/11/94 | 10/18/94 | 10/25/94 | 12/13/94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 47 | 71* | 38 | 31 | 32 | 30 | 29 | 28 | 38 | 44 | 50 | 50 | 39 | 45 | 39 | 32 | 30 | 29 | 46 | 45 | 39 | 38 | 44 | 41 | 48 |
| 4 | 51 | | | 28 | | | | | | | | 58 | | | | 29 | | | | 45 | | | | 41 | 48 |
| 6 | 49 | | | 45 | | | | | | | | 35 | | | | 31 | | | | 49 | | | | 43 | 49 |
| 8 | 51 | | | 32 | | | | 16 | | | | 16 | | | | 18 | | | | 52 | | | | 42 | 52 |
| 10 | 55 | | | 56 | | | | 67 | | | | 50 | | | | 123* | | | | 41 | | | | 42 | 72 |

Appendix H5.2 Concentrations of Cu in L302S for 1994.

| Depth | 5/7/94 | 7/4/94 | 7/25/94 | 8/9/94 | 8/31/94 | 9/27/94 | 10/25/94 |
|---|---|---|---|---|---|---|---|
| 1 | | 0.2 | 0.2 | 0.2 | | | 0.2 |
| 4 | | | | | | | 0.4 |
| 6 | | | | | | 5.4 | 0.6 |
| 8 | | | | | | | 0.3 |
| 10 | 0.2 | | | 0.4 | 0.4 | | 0.3 |

Appendix H5.3 Concentrations of Fe in L302S for 1994.

| Depth | 5/11/94 | 5/24/94 | 5/30/94 | 6/7/94 | 6/13/94 | 6/21/94 | 6/27/94 | 7/4/94 | 7/11/94 | 7/25/94 | 7/25/94 | 8/2/94 | 8/9/94 | 8/17/94 | 8/24/94 | 8/31/94 | 9/7/94 | 9/14/94 | 9/20/94 | 9/27/94 | 10/4/94 | 10/11/94 | 10/18/94 | 10/25/94 | 12/13/94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 559* | 465 | 70 | 350 | 48 | 13 | 15 | 10 | 136 | 7 | 215 | 231 | 164 | 124 | 156 | 67 | 148 | 93 | 236 | 289 | 440 | 356 | 256 | 205 | 115 |
| 4 | 623* | | | 284 | | | | | | | | 192 | | | | 116 | | | | 258 | | | | 191 | 170 |
| 6 | 751 | | | 406 | | | | 141 | | | | 745 | | | | 92 | | | | 357 | | | | 232 | 267 |
| 8 | 887 | | | 847 | | | | 1027 | | | | 1750 | | | | 1325 | | | | 2632* | | | | 198 | 549 |
| 10 | 1103 | | | 6556 | | | | 11944 | | | | 358 | | | | 32225 | | | | 38422 | | | | 225 | 4311 |

Appendix H5.4 Concentrations of Mn in L302S for 1994

| Depth | 5/11/94 | 5/24/94 | 5/30/94 | 6/7/94 | 6/13/94 | 6/21/94 | 6/27/94 | 7/6/94 | 7/11/94 | 7/20/94 | 7/25/94 | 8/2/94 | 8/8/94 | 8/17/94 | 8/24/94 | 8/31/94 | 9/7/94 | 9/14/94 | 9/20/94 | 9/27/94 | 10/4/94 | 10/11/94 | 10/18/94 | 10/25/94 | 12/13/94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 204 | 384* | 191 | 184 | 179 | 176 | 173 | 175 | 182 | 153 | 149 | 143 | 150 | 145 | 145 | 147 | 147 | 142 | 133 | 135 | 138 | 141 | 135 | 137 | 131 |
| 4 | 209 | | | 200 | | | | | | | | 150 | | | | 147 | | | | 136 | | | | 136 | 128 |
| 6 | 215 | | | 218 | | | | 218 | | | | 221 | | | | 148 | | | | 136 | | | | 136 | 130 |
| 8 | 218 | | | 215 | | | | 245 | | | | 258 | | | | 272 | | | | 259 | | | | 136 | 135 |
| 10 | 215 | | | 287 | | | | 325 | | | | 156 | | | | 370 | | | | 404 | | | | 135 | 174 |

Appendix H5.5 Concentrations of Zn in L302S for 1994

| Depth | 5/11/94 | 5/24/94 | 5/30/94 | 6/7/94 | 6/13/94 | 6/21/94 | 6/27/94 | 7/6/94 | 7/11/94 | 7/20/94 | 7/25/94 | 8/2/94 | 8/8/94 | 8/17/94 | 8/24/94 | 8/31/94 | 9/7/94 | 9/14/94 | 9/20/94 | 9/27/94 | 10/4/94 | 10/11/94 | 10/18/94 | 10/25/94 | 12/13/94 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | 9.2* | 5.7 | 8.5* | 4.7 | 3.7 | 3.7 | 4.8 | 4.8 | 6.8 | 4.1 | 6 | 5.4 | 3.8 | 4.3 | 3.7 | 3.3 | 4.4 | 3.3 | 3.2 | 3.8 | 3.1 | 3.3 | 7.2 | 0.7* |
| 4 | 7.4 | | | 4.1 | | | | 13.8* | | | | 4 | | | | 3.3 | | | | 3.8 | | | | 5.3 | 3.4 |
| 6 | 4 | | | 4.1 | | | | 8.8* | | | | 3 | | | | 4.3 | | | | 4.1 | | | | 7 | 3.5 |
| 8 | 8* | | | 3 | | | | 3.9 | | | | 5.5 | | | | 2.4 | | | | 4.1 | | | | 3.9 | 3.2 |
| 10 | 3.7 | | | 5.1 | | | | 4.9 | | | | 3.5 | | | | 3.8 | | | | 7* | | | | 3.5 | 3 |

Appendix I1.1 Concentrations of Al in L223 for 1995.

| Depth | 3/28/95 | 5/12/95 | 6/14/95 | 6/28/95 | 7/12/95 | 7/26/95 | 8/8/95 | 8/25/95 | 9/8/95 | 9/22/95 | 10/4/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 19* | 19* | 11 | 10 | 9 | 13 | 9 | 9 | 7 | 8 | 8 | 10 | 5 |
| 4 | 18 | 23* | 12 | 9 | | 11 | | 9 | | 6 | | 9 | 5 |
| 8 | 17* | 29* | 10 | 11 | | 13 | | 9 | | 8 | | 7 | 7 |
| 10 | 23 | 19 | 14 | 16 | | 17 | | 15 | | 13 | | 8 | 12 |
| 12 | 30 | 25 | 22 | 16 | | 46* | | 30 | | 20 | | 9 | 15 |
| 14 | 163 | 21 | 25 | 35 | | 57 | | 144 | | 37 | | 9 | 15 |

Appendix I1.2 Concentrations of Cu in L223 for 1995.

| Depth | 3/28/95 | 5/12/95 | 6/14/95 | 6/28/95 | 7/12/95 | 7/26/95 | 8/8/95 | 8/25/95 | 9/8/95 | 9/22/95 | 10/4/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.6 | 0.7 | 0.4 | 0.4 | 0.3 | 0.6 | 0.2 | 0 | 0.3 | 0 | 0.2 | 0.6 | 0.2 |
| 4 | 0.3 | 0.4 | 0.3 | 0.4 | | 0.3 | | 0.2 | | 0.2 | | 0.2 | 0.3 |
| 8 | 0 | 0.6 | 0.3 | 0.3 | | 0.3 | | 0.3 | | 0.2 | | 0 | 0.5 |
| 10 | 0.3 | 0.7 | 0.4 | 0.5 | | 0.5 | | 0.9 | | 0.3 | | 0.2 | 0.5 |
| 12 | 0.4 | 0.4 | 0.4 | 0.4 | | 1.6 | | 0.4 | | 0.3 | | 1.4 | 0.6 |
| 14 | 0.6 | 0.5 | 0.7 | 1.1 | | 0.7 | | 0.4 | | 0.4 | | 0.2 | 0.3 |

Appendix I1.3 Concentrations of Fe in L223 for 1995.

| Depth | 3/28/95 | 5/12/95 | 6/14/95 | 6/28/95 | 7/12/95 | 7/26/95 | 8/8/95 | 8/25/95 | 9/8/95 | 9/22/95 | 10/4/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 32 | 51 | 17 | 15 | 13 | 23 | 13 | 57 | 23 | 49 | 61 | 134* | 101 |
| 4 | 33 | 49 | 13 | 18 | | 18 | | 27 | | 49 | | 134* | 101 |
| 8 | 55 | 157 | 37 | 27 | | 38 | | 31 | | 80 | | 151 | 122 |
| 10 | 104 | 297 | 86 | 58 | | 459 | | 584 | | 866 | | 139 | 150 |
| 12 | 2703 | 647 | 702 | 485 | | 4748 | | 4387 | | 3630 | | 139 | 906 |
| 14 | 20540* | 931 | 931 | 2159 | | 5061 | | 1157 | | 7605 | | 132 | 822 |

Appendix I1.4 Concentrations of Mn in L223 for 1995.

| Depth | 3/28/95 | 5/12/95 | 6/14/95 | 6/28/95 | 7/12/95 | 7/26/95 | 8/8/95 | 8/25/95 | 9/8/95 | 9/22/95 | 10/4/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 7 | 18 | 9 | 24 | 23 | 3 | 6 | 11 | 6 | 12 | 16 | 25 | 20 |
| 4 | 8 | 17 | 5 | 7 | | 3 | | 2 | | 12 | | 25 | 19 |
| 8 | 28 | 24 | 25 | 7 | | 41 | | 1 | | 12 | | 25 | 24 |
| 10 | 51 | 38 | 34 | 48 | | 167 | | 207 | | 180 | | 18 | 42 |
| 12 | 282 | 63 | 118 | 148 | | 305 | | 384 | | 441 | | 26 | 134 |
| 14 | 585* | 111 | 136 | 217 | | 307 | | 69 | | 450 | | 25 | 121 |

Appendix I1.5 Concentrations of Zn in L223 for 1995.

| Depth | 3/28/95 | 5/12/95 | 6/14/95 | 6/28/95 | 7/12/95 | 7/26/95 | 8/8/95 | 8/25/95 | 9/8/95 | 9/22/95 | 10/4/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.8 | 0.7 | 0 | 2.8 | 1.8 | 0 | 0.7 | 0.7 | 1.1 | 1 | 0 | 2.8 | 0 |
| 4 | 1.5 | 0.7 | 1.3 | 0.8 | | 0 | | 0.7 | | 0.8 | | 0 | 0 |
| 8 | 2.4 | 2.3 | 1.1 | 1.3 | | 2.7 | | 0.8 | | 0.6 | | 0.8 | 0 |
| 10 | 1.2 | 1.8 | 0.9 | 1.8 | | 1.7 | | 1.2 | | 1 | | 0.5 | 1.2 |
| 12 | 3.2 | 2.8 | 1.9 | 1.7 | | 5.9* | | 1.3 | | 1.3 | | 0.4 | 1.2 |
| 14 | 1.4 | 1.3 | 0.5 | 7.1* | | 1.2 | | 1 | | 2.8 | | 0.3 | 1 |

Appendix I2.1 Concentrations of Al in L226N for 1995.

| Depth | 3/28/95 | 5/24/95 | 6/7/95 | 6/28/95 | 7/31/95 | 8/25/95 | 9/28/95 |
|---|---|---|---|---|---|---|---|
| 1 | 37 | 34 | 50 | 10 | 1 | 14 | 12 |
| 3 | 34 | | 42 | 10 | 14 | 16 | 14 |
| 5 | 34 | | 46 | 23 | 21 | 18 | 12 |
| 8 | 33 | | 38 | 39 | 32 | 42 | 43 |
| 11 | 37* | | 57 | 57 | 66 | 58 | 59 |

Appendix I2.2 Concentrations of Cu in L226N for 1995.

| Depth | 3/28/95 | 5/24/95 | 6/7/95 | 6/28/95 | 7/31/95 | 8/25/95 | 9/28/95 |
|---|---|---|---|---|---|---|---|
| 1 | 0.3 | 0.5 | 0.6 | 0.2 | 0.3 | 0 | 0 |
| 3 | 0 | | 0.3 | 0.3 | 0.4 | 0.5 | 0 |
| 5 | 1.5* | | 0.5 | 0.3 | 0 | 0 | 0.2 |
| 8 | 0.7 | | 0.6 | 0.5 | 0 | 0 | 0.4 |
| 11 | 0 | | 0.5 | 0.4 | 0 | 0.4 | 0.2 |

Appendix I2.3 Concentrations of Fe in L226N for 1995.

| Depth | 3/28/95 | 5/24/95 | 6/7/95 | 6/28/95 | 7/31/95 | 8/25/95 | 9/28/95 |
|---|---|---|---|---|---|---|---|
| 1 | 143* | 63 | 39 | 45 | 0 | 57 | 60 |
| 3 | 146* | | 46 | 55 | 40 | 50 | 70 |
| 5 | 153* | | 73 | 62 | 72 | 78 | 70 |
| 8 | 178 | | 262 | 288 | 213 | 959 | 436 |
| 11 | 380* | | 2328 | 2390 | 3010 | 3307 | 3563 |

Appendix I2.4 Concentrations of Mn in L226N for 1995.

| Depth | 3/28/95 | 5/24/95 | 6/7/95 | 6/28/95 | 7/31/95 | 8/25/95 | 9/28/95 |
|---|---|---|---|---|---|---|---|
| 1 | 29 | 22 | 17 | 22 | 5 | 27 | 40 |
| 3 | 27 | | 27 | 41 | 1 | 27 | 40 |
| 5 | 28 | | 7 | 28 | 8 | 42 | 42 |
| 8 | 49 | | 124 | 218 | 150 | 649 | 735 |
| 11 | 556 | | 574 | 583 | 646 | 678 | 709 |

Appendix I2.5 Concentrations of Zn in L226N for 1995.

| Depth | 3/28/95 | 5/24/95 | 6/7/95 | 6/28/95 | 7/31/95 | 8/25/95 | 9/28/95 |
|---|---|---|---|---|---|---|---|
| 1 | 3.5 | 1.2 | 2 | 0.3 | 1.1 | 1.6 | 0.8 |
| 3 | 0.8 | | 0.9 | 0.3 | 0.7 | 1.6 | 1 |
| 5 | 1.9 | | 2.5 | 0.4 | 0.4 | 0.7 | 0.9 |
| 8 | 1.3 | | 4.4 | 3.7 | 0.7 | 1.9 | 3.1 |
| 11 | 1.2 | | 2.5 | 2.7 | 1.1 | 2.6 | 1.7 |

Appendix I3.1 Concentrations of Al in L226S for 1995.

| Depth | 3/28/95 | 5/24/95 | 6/7/95 | 6/28/95 | 7/31/95 | 8/25/95 | 9/28/95 |
|---|---|---|---|---|---|---|---|
| 1 | 32 | 27 | 22 | 13 | 12 | 13 | 11 |
| 3 | 29 | | 27 | 11 | 11 | 13 | 10 |
| 5 | 32 | | 36 | 22 | 18 | 16 | 12 |
| 8 | 51 | | 43 | 41 | 41 | 33 | 37 |

Appendix I3.2 Concentrations of Cu in L226S for 1995.

| Depth | 3/28/95 | 5/24/95 | 6/7/95 | 6/28/95 | 7/31/95 | 8/25/95 | 9/28/95 |
|---|---|---|---|---|---|---|---|
| 1 | 0.3 | 0.3 | 0.3 | 0.3 | 0 | 0 | 0.5 |
| 3 | 0.6 | | 0.6 | 0.2 | 0 | 0 | 0 |
| 5 | 0 | | 0.4* | 0.2 | 0 | 0 | 0.2 |
| 8 | 0.2 | | 0.5 | 0.4 | 0.2 | 0 | 0.2 |

Appendix I3.3 Concentrations of Fe in L226S for 1995

| Depth | 3/28/95 | 5/24/95 | 6/7/95 | 6/26/95 | 7/31/95 | 8/25/95 | 9/25/95 |
|---|---|---|---|---|---|---|---|
| 1 | 119" | 71 | 44 | 42 | 45 | 55 | 77 |
| 3 | 104" | | 46 | 56 | 40 | 50 | 58 |
| 5 | 145" | | 71 | 103 | 72 | 62 | 72 |
| 8 | 2513 | | 1029 | 823 | 2519 | 583 | 1302 |

Appendix I3.4 Concentrations of Mn in L226S for 1995

| Depth | 3/28/95 | 5/24/95 | 6/7/95 | 6/26/95 | 7/31/95 | 8/25/95 | 9/25/95 |
|---|---|---|---|---|---|---|---|
| 1 | 25 | 22 | 19 | 17 | 27 | 26 | 40" |
| 3 | 26 | | 2 | 26 | 10 | 27 | 42 |
| 5 | 51 | | 16 | 6 | 6 | 28 | 45 |
| 8 | 722 | | 516 | 652 | 864 | 799 | 1000 |

Appendix I3.5 Concentrations of Zn in L226S for 1995

| Depth | 3/28/95 | 5/24/95 | 6/7/95 | 6/26/95 | 7/31/95 | 8/25/95 | 9/25/95 |
|---|---|---|---|---|---|---|---|
| 1 | 0.8 | 0.9 | 0" | 0.9 | 0.7 | 0.6 | 0.9 |
| 5 | 1.7 | | 0.5 | 1.5 | 0 | 0.5 | 1.5 |
| 8 | 1 | | 2.2 | 3 | 1.1 | 3.1" | 2.2 |
| 3 | 2.2 | | 0 | 0.8 | 0.5 | 0.6 | 2.2 |

Appendix I4.1 Concentrations of Al in L302N for 1995

| Depth | 3/28/95 | 5/10/95 | 5/24/95 | 6/7/95 | 6/26/95 | 8/11/95 | 8/25/95 | 9/27/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 48 | 43 | 40 | 38 | 22 | 27 | 25 | 20 | 21 | 15 |
| 4 | 49 | 44 | | 38 | 21 | 30 | 30 | 22 | 19 | 16 |
| 6 | 61 | 49 | | 43 | 39 | 45 | 38 | 21 | 21 | 17 |
| 9 | 47 | 49 | | 40 | 43 | 58 | 41 | 38 | 20 | 18 |
| 11 | 98 | 50 | | 50 | 55 | 80 | 63 | 75 | 18 | 30 |
| 13 | 172" | 84 | | 95 | 74 | 67 | 72 | 82 | 20 | 29 |

Appendix I4.2 Concentrations of Cu in L302N for 1995

| Depth | 3/28/95 | 5/10/95 | 5/24/95 | 6/7/95 | 6/26/95 | 8/11/95 | 8/25/95 | 9/27/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.7 | 0 | 0.6 | 0.3 | 0.5 | 0.2 | 0.3 | 0.6 | 0.5 | 0.2 |
| 4 | 0.5 | 0 | | 0.4 | 0.5 | 0 | 0 | 0.5 | 0 | 0.3 |
| 6 | 0.4 | 0.2 | | 0.3 | 0.3 | 0.4 | 0.2 | 0.4 | 0 | 0 |
| 9 | 0 | 0.3 | | 0.4 | 0.5 | 0.3 | 0.3 | 0.3 | 0 | 0.3 |
| 11 | 0.7 | 0.2 | | 0.5 | 0.5 | 0.3 | 0.3 | 0.4 | 0 | 0.3 |
| 13 | 1.1" | 0.3 | | 0.6 | 0.5 | 0 | 0.2 | 0.5 | 0 | 0.5 |

Appendix I4.3 Concentrations of Fe in L302N for 1995

| Depth | 3/28/95 | 5/10/95 | 5/24/95 | 6/7/95 | 6/26/95 | 8/11/95 | 8/25/95 | 9/27/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 97 | 172 | 100 | 71 | 40 | 74 | 81 | 158 | 196 | 110 |
| 4 | 126 | 169 | | 101 | 48 | 85 | 91 | 151 | 180 | 132 |
| 6 | 153 | 196 | | 138 | 196 | 371 | 390 | 148 | 189 | 132 |
| 9 | 441 | 410 | | 455 | 451 | 1452 | 828 | 863 | 201 | 295 |
| 11 | 3851 | 471 | | 1328 | 1427 | 2314 | 2862 | 3702 | 189 | 1093 |
| 13 | 8610 | 527 | | 2947 | 2190 | 2314 | 2914 | 3891 | 180 | 1115 |

Appendix I4.4 Concentrations of Mn in L302N for 1995

| Depth | 3/28/95 | 5/10/95 | 5/24/95 | 6/7/95 | 6/26/95 | 8/11/95 | 8/25/95 | 9/27/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 96" | 84 | 68 | 59 | 77 | 59 | 60 | 69 | 67 | 62 |
| 4 | 96 | 90 | | 67 | 79 | 62 | 67 | 71 | 66 | 60 |
| 6 | 105 | 99 | | 96 | 108 | 130 | 137 | 86 | 70 | 64 |
| 9 | 132 | 111 | | 130 | 144 | 174 | 185 | 241 | 66 | 93 |
| 11 | 178 | 114 | | 153 | 158 | 175 | 190 | 232 | 65 | 132 |
| 13 | 231 | 120 | | 194 | 168 | 172 | 192 | 229 | 68 | 134 |

Appendix I4.5 Concentrations of Zn in L302N for 1995

| Depth | 3/28/95 | 5/10/95 | 5/24/95 | 6/7/95 | 6/26/95 | 8/11/95 | 8/25/95 | 9/27/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.5" | 1.9 | 3 | 2.3 | 1.2 | 2.2 | 1.8 | 2.3 | 1.2 | 1.8 |
| 4 | 5.9" | 1.9 | | 1.5 | 0 | 1.8 | 1.9 | 2.4 | 1.5 | 1.2 |
| 6 | 4.5" | 2.1 | | 2 | 1.5 | 2.4 | 3.4 | 1.4 | 1 | 1.2 |
| 9 | 3 | 2.5 | | 1.8 | 4.4" | 2.3 | 1.6 | 3.4 | 1.4 | 2.4 |
| 11 | 3 | 1.9 | | 1.8 | 4.5 | 2.6 | 1.9 | 1.9 | 1.2 | 3.9 |
| 13 | 2.8 | 2.4 | | 2 | 5" | 2.1 | 1.5 | 2.4 | 1.5 | 2.8 |

Appendix I5.1 Concentrations of Al in L302S for 1995

| Depth | 3/28/95 | 5/10/95 | 5/24/95 | 6/7/95 | 6/26/95 | 8/11/95 | 8/25/95 | 9/27/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 84" | 44 | 42 | 31 | 17 | 17 | 14 | 18 | 28 | 26 |
| 4 | 45 | 51 | | 39 | 13 | 21 | 20 | 18 | 27 | 27 |
| 6 | 44 | 52 | | 45 | 20 | 15 | 23 | 19 | 22 | 25 |
| 8 | 116" | 56 | | 62 | 25 | 26 | 36 | 23 | 24 | 51 |
| 10 | 158 | 71 | | 90 | 48 | 134 | 62 | 26 | 25 | 112 |

Appendix I5.2 Concentrations of Cu in L302S for 1995

| Depth | 3/28/95 | 5/10/95 | 5/24/95 | 6/7/95 | 6/26/95 | 8/11/95 | 8/25/95 | 9/27/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.3 | 0.7 | 0.3 | 0.4 | 0.4 | 0.4 | 0 | 0 | 0 | 0.5 |
| 4 | 0.4 | 0.4 | | 0.4 | 0.4 | 0.6 | 0 | 1.7" | 0.3 | 0.2 |
| 6 | 0.3 | 0.2 | | 0.7 | 0.3 | 0.3 | 0 | 0 | 0.2 | 0.3 |
| 8 | 0.3 | 0.3 | | 0.5 | 0.4 | 0.2 | 0.3 | 0.3 | 0 | 0.9" |
| 10 | 0.6 | 0.2 | | 0.6 | 0.4 | 0.2 | 0.4 | 0.4 | 0 | 0.9 |

Appendix I5.3 Concentrations of Fe in L302S for 1995

| Depth | 3/28/95 | 5/10/95 | 5/24/95 | 6/7/95 | 6/26/95 | 8/11/95 | 8/25/95 | 9/27/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 139 | 387" | 332 | 185 | 91 | 93 | 188 | 259 | 137 | 137 |
| 4 | 231 | 510" | | 247 | 82 | 108 | 173 | 259 | 122 | 134 |
| 6 | 959 | 963 | | 731 | 147 | 240 | 216 | 286 | 127 | 216 |
| 8 | 9410" | 2063 | | 2878 | 1167 | 2207 | 1736 | 295 | 198 | 4235 |
| 10 | 17210 | 3135 | | 5280 | 7450 | 20090 | 11490 | 618 | 134 | 12850 |

Appendix I5.4 Concentrations of Mn in L302S for 1995

| Depth | 3/28/95 | 5/10/95 | 5/24/95 | 6/7/95 | 6/26/95 | 8/11/95 | 8/25/95 | 9/27/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 148 | 144 | 131 | 114 | 108 | 99 | 101 | 100 | 103 | 102 |
| 4 | 158" | 147 | | 119 | 100 | 99 | 103 | 102 | 103 | 100 |
| 6 | 187 | 167 | | 160 | 156 | 120 | 108 | 104 | 101 | 113 |
| 8 | 255 | 178 | | 204 | 217 | 216 | 231 | 101 | 105 | 175 |
| 10 | 361 | 198 | | 216 | 244 | 281 | 295 | 108 | 97 | 220 |

Appendix I5.5 Concentrations of Zn in L302S for 1995

| Depth | 3/28/95 | 5/10/95 | 5/24/95 | 6/7/95 | 6/26/95 | 8/11/95 | 8/25/95 | 9/27/95 | 11/1/95 | 12/13/95 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.3 | 5.8" | 2.8 | 1.8 | 1.7 | 2 | 1.5 | 1.9 | 2.8 | 0 |
| 4 | 3.4 | 5.2" | | 2.5 | 1.7 | 3 | 1.6 | 2.6 | 2.3 | 3.3 |
| 6 | 2.6 | 2.6 | | 2.8 | 1.9 | 2.3 | 2.6 | 1.4 | 2.8 | 3.1 |
| 8 | 1.4 | 3.3 | | 4.1 | 1.4 | 2.3 | 2.2 | 1.4 | 2.6 | 3.8 |
| 10 | 1.7 | 3.5 | | 4.3 | 1.8 | 2.1 | 2.2 | 3.9 | 2.8 | 6.6" |

Appendix J1.1 Concentrations of Al in L223 for 1996

| Depth | 3/26/96 | 12/15/96 |
|---|---|---|
| 1 | 10.7 | 9.12 |
| 4 | 5.75 | 10.2 |
| 6 | 14 | 12.7 |
| 10 | 12.5 | 39.3 |
| 12 | 15.8 | 38.8 |
| 14 | 50.5 | 91.6 |

Appendix J1.2 Concentrations of Cu in L223 for 1996

| Depth | 3/26/96 | 12/15/96 |
|---|---|---|
| 1 | 0.8 | 0.34 |
| 4 | 0.83 | 0.27 |
| 6 | 0.85 | 0 |
| 10 | 0 | 0.44 |
| 12 | 0.67 | 0.39 |
| 14 | 0.74 | 1.15 |

Appendix J1.3 Concentrations of Fe in L223 for 1998.

| Depth | 3/26/98 | 12/15/98 |
|---|---|---|
| 1 | 35.1 | 28.6 |
| 4 | 27.5 | 40.9 |
| 8 | 52.8 | 64 |
| 10 | 150 | 143 |
| 12 | 827 | 371 |
| 14 | 5850 | 7680 |

Appendix J1.4 Concentrations of Mn in L223 for 1998.

| Depth | 3/26/98 | 12/15/98 |
|---|---|---|
| 1 | 52.8 | 3.47 |
| 4 | 7.54 | 7.24 |
| 8 | 21.9 | 11.1 |
| 10 | 80.7 | 54.2 |
| 12 | 217 | 106 |
| 14 | 278 | 471 |

Appendix J1.5 Concentrations of Zn in L223 for 1998.

| Depth | 3/26/98 | 12/15/98 |
|---|---|---|
| 1 | 2.13 | 0.42 |
| 4 | 2.45 | 0.2 |
| 8 | 6.82 | 0.42 |
| 10 | 1.37 | 0.68 |
| 12 | 5.2 | 1.51 |
| 14 | 2.32 | 1.83 |

Appendix J2.1 Concentrations of Al in L226N for 1998.

| Depth | 3/26/98 | 5/26/98 | 6/10/98 | 6/25/98 | 7/8/98 | 7/22/98 | 8/7/98 | 8/21/98 | 9/28/98 | 9/16/98 | 10/15/98 | 10/28/98 | 12/15/98 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11.9 | 82.5" | 46 | 27.4 | 19.9 | 27.1 | 56 | 15.7 | 19.5 | 16.8 | 17.7 | 25.2 | 24.5 |
| 3 | 14.3 | 80.2" | 51.2 | 24.3 | 29.2 | 28.6 | 17.9 | 19.2 | 21 | 17.9 | 19 | 23 | 27.2 |
| 5 | 18.8 | 83 | 71.1 | 86.3 | 36 | 28.6 | 28.4 | 24 | 25.7 | 18.8 | 17.4 | 21.7 | 30.7 |
| 8 | 28.3 | 71.5 | 57.7 | 58.6 | 58.5 | 44.9 | 54.8 | 46.2 | 48.5 | 46.2 | 43.4 | 23 | 45.3 |
| 11 | 23.2 | 58.2 | 65 | 79.3 | 61.8 | 53.2 | 0" | 52.9 | 58.9 | 62.6 | 60.3 | 39.7 | 33.5 |

Appendix J2.2 Concentrations of Cu in L226N for 1998.

| Depth | 3/26/98 | 5/26/98 | 6/10/98 | 6/25/98 | 7/8/98 | 7/22/98 | 8/7/98 | 8/21/98 | 9/28/98 | 9/16/98 | 10/15/98 | 10/28/98 | 12/15/98 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0.8 | 0.3 | 0 | 0.98 | 0 | 0.33 | 1.04 | 1.81" | 0 | 0 | 0 | 0.34 |
| 3 | 0 | 0 | 0 | 0 | 0.39 | 0.35 | 0 | 0 | 0.32 | 0 | 0 | 5.94" | 0.49 |
| 5 | 0 | 0 | 2.04" | 0 | 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 1.12 | 0.43 |
| 8 | 0.57 | 0 | 0 | 0.42 | 0 | 0 | 0 | 0.26 | 0 | 0.24 | 0 | 0.41 | 2.34" |
| 11 | 0.58 | 0.5 | 0 | 0.29 | 0.36 | 0.45 | 0 | 0.26 | 0 | 0 | 0 | 0.64 | 0.44 |

Appendix J2.4 Concentrations of Mn in L226N for 1998.

| Depth | 3/26/98 | 5/26/98 | 6/10/98 | 6/25/98 | 7/8/98 | 7/22/98 | 8/7/98 | 8/21/98 | 9/28/98 | 9/16/98 | 10/15/98 | 10/28/98 | 12/15/98 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4.5 | 84.8 | 42.9 | 37.1 | 37.1 | 28.9 | 983" | 22.4 | 26.5 | 22.5 | 33.4 | 63.7 | 39 |
| 3 | 18.3 | 75.5 | 29.4 | 40.5 | 36.2 | 30.9 | 29.2 | 27.9 | 27.3 | 21.7 | 34.3 | 84.2" | 44.2 |
| 5 | 102" | 54.8 | 45.1 | 32.3 | 33.6 | 33.5 | 33.5 | 33.1 | 52.9 | 25.5 | 34.7 | 62.4 | 62.4 |
| 8 | 302 | 99.4 | 313 | 248 | 285 | 549 | 685 | 743 | 718 | 857 | 810 | 81.6 | 139.1 |
| 11 | 1186 | 1152 | 1039 | 1064 | 1041 | 923 | 0" | 982 | 1004 | 1015 | 1029 | 80.7 | 422 |

Appendix J3.1 Concentrations of Al in L226Star 1998.

| Depth | 3/26/98 | 5/26/98 | 6/10/98 | 6/25/98 | 7/8/98 | 7/22/98 | 8/7/98 | 8/21/98 | 9/28/98 | 9/16/98 | 10/15/98 | 10/28/98 | 12/15/98 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8.62 | 84.8" | 33.6 | 18.5 | 20.2 | 22.2 | 15.8 | 14.4 | 16.8 | 16.3 | 18.6 | 20.9 | 25.2 |
| 3 | 10.5 | 81" | 38.7 | 18 | 18.4 | 22.4 | 0 | 20.8 | 18.8 | 13.8 | 17.8 | 19.5 | 18.4 |
| 5 | 18 | 86.7" | 44.8 | 39.4 | 54 | 28.9 | 27.1 | 21 | 19 | 15.9 | 16.1 | 21.1 | 28.1 |
| 8 | 48.8 | 54.3 | 58.8 | 51.9 | 48.9 | 45.1 | 48.2 | 53.6 | 31.5 | 44.9 | 30.5 | 18.4" | 28.8 |

Appendix J3.2 Concentrations of Cu in L226S for 1998.

| Depth | 3/26/98 | 5/26/98 | 6/10/98 | 6/25/98 | 7/8/98 | 7/22/98 | 8/7/98 | 8/21/98 | 9/28/98 | 9/16/98 | 10/15/98 | 10/28/98 | 12/15/98 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 1.89" | 0.34 | 0.4 | 0 | 0.29 | 0.26 | 0.35 | 0.39 | 0 | 0 | 0 | 0.59 |
| 3 | 0 | 0.28 | 0.28 | 0 | 1.48" | 0 | 0 | 0 | 0.63 | 0.27 | 0 | 0 | 0.41 |
| 5 | 0.39 | 0 | 2.14" | 0 | 0 | 0 | 0 | 0.5 | 0.27 | 0 | 0 | 0 | 0.58 |
| 8 | 0 | 0 | 0.38 | 0 | 0.54" | 0 | 0 | 0.29 | 0.32 | 0 | 0 | 0 | 0.41 |

Appendix J3.4 Concentrations of Mn in L226S for 1998.

| Depth | 3/26/98 | 5/26/98 | 6/10/98 | 6/25/98 | 7/8/98 | 7/22/98 | 8/7/98 | 8/21/98 | 9/28/98 | 9/16/98 | 10/15/98 | 10/28/98 | 12/15/98 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5.38 | 82" | 42.5 | 34 | 37.5 | 32.7 | 23.6 | 24.2 | 25.6 | 19.9 | 30.4 | 61.1" | 44.2 |
| 3 | 35.9 | 82.9" | 38.8 | 32.8 | 34.9 | 30.5 | 0 | 29 | 33 | 19.7 | 28.1 | 86.1" | 38.1 |
| 5 | 241" | 74.2 | 79.4 | 31.5 | 57.3 | 32.2 | 41.7 | 36 | 39 | 20.7 | 25.5 | 86.8 | 47.2 |
| 8 | 754 | 462 | 830 | 1090 | 993 | 1100 | 1193 | 1246 | 842 | 1281 | 1149 | 86.4 | 56.3 |

Appendix J4.1 Concentrations of Al in L302N for 1998.

| Depth | 3/26/98 |
|---|---|
| 1 | 14.9 |
| 4 | 30.1 |
| 6 | 24.5 |
| 9 | 33.1 |
| 11 | 58 |
| 13 | 90.3 |

Appendix J4.2 Concentrations of Cu in L302N for 1998.

| Depth | 3/26/98 |
|---|---|
| 1 | 0 |
| 4 | 0.72 |
| 6 | 0 |
| 9 | 0 |
| 11 | 0.45 |
| 13 | 0.8 |

Appendix J2.3 Concentrations of Fe in L226N for 1998.

| Depth | 3/26/98 | 5/26/98 | 6/10/98 | 6/25/98 | 7/8/98 | 7/22/98 | 8/7/98 | 8/21/98 | 9/28/98 | 9/16/98 | 10/15/98 | 10/28/98 | 12/15/98 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 29.5 | 120 | 72 | 55.2 | 55.1 | 62 | 3470" | 84 | 50 | 71 | 83 | 235 | 117 |
| 3 | 79 | 119 | 67.4 | 58.7 | 57 | 61 | 48.5 | 62 | 55 | 55 | 74.1 | 250" | 136 |
| 5 | 141 | 111 | 103 | 63 | 75 | 68 | 58 | 75 | 110 | 54 | 89 | 238" | 143 |
| 8 | 279 | 235 | 506 | 427 | 333 | 737 | 385 | 303 | 264 | 224 | 205 | 238 | 180 |
| 11 | 138 | 2680 | 2550 | 3470 | 3354 | 2761 | 0 | 3370 | 3590 | 4010 | 3970 | 242 | 303 |

Appendix J2.5 Concentrations of Zn in L226N for 1998.

| Depth | 3/26/98 | 5/26/98 | 6/10/98 | 6/25/98 | 7/8/98 | 7/22/98 | 8/7/98 | 8/21/98 | 9/28/98 | 9/16/98 | 10/15/98 | 10/28/98 | 12/15/98 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.58 | 2.14" | 1.01 | 0.63 | 1.1 | 1.08 | 1.5 | 0.86 | 0.7 | 0.45 | 0.7 | 0.88 | 0.94 |
| 3 | 0.61 | 1.14 | 0.9 | 0.89 | 0.97 | 0.54 | 0.45 | 0.39 | 0.58 | 0.57 | 2.23 | 2.51 | 4.19 |
| 5 | 0.86 | 1.26 | 1.82 | 1.26 | 1.31 | 1.31 | 0.49 | 0.96 | 1 | 0.58 | 0.98 | 1.27 | 1.2 |
| 8 | 2.99 | 2.86 | 2.51 | 1.23 | 1.73 | 0.74 | 4.15 | 1.52 | 3.04 | 4.19 | 3.49 | 0.97 | 3.8 |
| 11 | 2.32 | 1.94 | 3.11 | 1.15 | 0.79 | 0.54 | 0" | 1.87 | 1.96 | 1.76 | 2.39 | 1.25 | 2.49 |

Appendix J3.3 Concentrations of Fe in L226S for 1998.

| Depth | 3/26/98 | 5/26/98 | 6/10/98 | 6/25/98 | 7/8/98 | 7/22/98 | 8/7/98 | 8/21/98 | 9/28/98 | 9/16/98 | 10/15/98 | 10/28/98 | 12/15/98 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 27.8 | 137 | 77 | 52.6 | 73 | 81 | 48.9 | 47.2 | 90 | 45.4 | 63 | 211" | 115 |
| 3 | 84 | 138 | 75 | 50.2 | 77.2 | 55 | 0 | 51 | 54 | 48.9 | 73 | 222" | 33.4 |
| 5 | 194 | 218 | 179 | 94 | 122 | 84 | 79 | 70 | 84 | 49.4 | 57 | 213 | 138 |
| 8 | 2670 | 1121 | 1432 | 1914 | 1952 | 3070 | 3340 | 4400 | 362 | 3640 | 894 | 226 | 148 |

Appendix J3.5 Concentrations of Zn in L226S for 1998.

| Depth | 3/26/98 | 5/26/98 | 6/10/98 | 6/25/98 | 7/8/98 | 7/22/98 | 8/7/98 | 8/21/98 | 9/28/98 | 9/16/98 | 10/15/98 | 10/28/98 | 12/15/98 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.4 | 1.36 | 0.8 | 0.66 | 0.62 | 0.66 | 1.61 | 0.62 | 0.8 | 0.4 | 0.76 | 0.69 | 1.22 |
| 3 | 0.52 | 1.37 | 2.14 | 0.77 | 0.84 | 1.07 | 0.28 | 4.22" | 0.78 | 0.4 | 0.41 | 0.8 | 0.65 |
| 5 | 0.59 | 1.45 | 1.76" | 1.39 | 0.87 | 0.93 | 0.69 | 0.89 | 1.21 | 0.48 | 0.77 | 0.58 | 0.84 |
| 8 | 0.51 | 1.57 | 1.83 | 1.67 | 1.21 | 0.76 | 1.27 | 2.22 | 2.7 | 3.35 | 2.93 | 0.64 | 0.92 |

Appendix J4.3 Concentrations of Fe in L302N for 1996

| Depth | 3/26/96 |
|---|---|
| 1 | 27.3 |
| 4 | 80 |
| 6 | 119 |
| 9 | 523 |
| 11 | 3100 |
| 13 | 4310 |

Appendix J4.4 Concentrations of Mn in L302N for 1996

| Depth | 3/26/96 |
|---|---|
| 1 | 63.4 |
| 4 | 72.7 |
| 6 | 80.7 |
| 9 | 100 |
| 11 | 148 |
| 13 | 162 |

Appendix J4.5 Concentrations of Zn in L302N for 1996

| Depth | 3/26/96 |
|---|---|
| 1 | 0.86 |
| 4 | 3.33 |
| 6 | 1.53 |
| 9 | 2.19 |
| 11 | 0.91 |
| 13 | 2.01 |

Appendix J5.1 Concentrations of Al in L302S for 1996

| Depth | 3/26/96 | 5/28/96 | 6/25/96 | 7/23/96 | 8/7/96 | 8/4/96 | 10/1/96 | 10/29/96 | 12/15/96 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 63.6* | 41.4 | 15.5 | 16.9 | 20.5 | 19.8 | 31.4 | 30.5 |
| 4 | 33.3 | 73* | 52.7 | 23.1 | 19.5 | 19.2 | 19.7 | 33.2 | 30.2 |
| 6 | 27.3 | 73.6* | 58.3 | 30.9 | 33.2 | 32.7 | 19.4 | 28.1 | 36.8 |
| 8 | 76.8 | 88.5 | 97.4 | 80.7 | 106 | 100.8 | 24.3 | 36.7 | 67.2 |
| 10 | 97.6 | 76.2 | 168 | 182 | 254 | 177 | 243 | 28.8 | |

Appendix J5.2 Concentrations of Cu in L302S for 1996

| Depth | 3/26/96 | 5/28/96 | 6/25/96 | 7/23/96 | 8/7/96 | 8/4/96 | 10/1/96 | 10/29/96 | 12/15/96 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.25* |
| 4 | 0.52* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.41 |
| 6 | 0 | 0 | 0 | 0.36 | 0.39 | 0 | 0 | 0 | 0.31 |
| 8 | 0.32 | 0 | 0 | 0.33 | 1 | 0.24 | 0 | 0 | 0.41 |
| 10 | 0.37 | 0 | 0.45 | 0.7 | 0.55 | 0.31 | 0.39 | 0 | |

Appendix J5.4 Concentrations of Mn in L302S for 1996

| Depth | 3/26/96 | 5/28/96 | 6/25/96 | 7/23/96 | 8/7/96 | 8/4/96 | 10/1/96 | 10/29/96 | 12/15/96 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0* | 114 | 82.9 | 66.3 | 66.6 | 48.2 | 74.7 | 67.2 | 58.4 |
| 4 | 122 | 124 | 97.2 | 86.5 | 67 | 47.7 | 72.5 | 67.6 | 61.6 |
| 6 | 210 | 192 | 167 | 151 | 199 | 249 | 74.2 | 61.6 | 78.5 |
| 8 | 251 | 447 | 596 | 603 | 571 | 614 | 90.3 | 66.5 | 100 |
| 10 | 299 | 279 | 785 | 981 | 891 | 686 | 849 | 66.5 | |

Appendix J5.3 Concentrations of Fe in L302S for 1996

| Depth | 3/26/96 | 5/28/96 | 6/25/96 | 7/23/96 | 8/7/96 | 8/4/96 | 10/1/96 | 10/29/96 | 12/15/96 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 298 | 170 | 62 | 37.4 | 46.8 | 225 | 194 | 90 |
| 4 | 168 | 629* | 388 | 107 | 41.2 | 67 | 233 | 200 | 105 |
| 6 | 1023 | 2120 | 883 | 148 | 503 | 1186 | 236 | 186 | 175 |
| 8 | 8840 | 4140 | 4480 | 8340 | 11730 | 13290 | 784 | 185 | 3030 |
| 10 | 12680 | 2200 | 13280 | 19620 | 19320 | 19710 | 26910 | 194 | |

Appendix J5.5 Concentrations of Zn in L302S for 1996

| Depth | 3/26/96 | 5/28/96 | 6/25/96 | 7/23/96 | 8/7/96 | 8/4/96 | 10/1/96 | 10/29/96 | 12/15/96 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 1.68 | 2.18 | 1.06 | 1.08 | 0.97 | 1.43 | 2.3 | 1.27 |
| 4 | 4.15 | 4.48 | 3.06 | 1.14 | 1.13 | 1.05 | 3.84 | 2.37 | 2.4 |
| 6 | 1.69 | 3.22 | 1.43 | 1.34 | 3.55 | 1.85 | 2.28 | 1.96 | 3.62 |
| 8 | 0.72 | 0.59* | 1.45 | 0.89 | 1.92 | 2.03 | 2.06 | 1.62 | 1.93 |
| 10 | 0.99 | 0 | 1.28 | 1.42 | 0.98 | 1.7 | 5.38 | 3.87 | |